Home Computing WEEKLY

An Argus Specialist Publication

Britain's leading weekly magazine for software reviews

No.47
Jan 31-Feb 6, 1984

40p

Commodore 64: Using our Extended BASIC AND how how to make music

Three pages of Spectrum software reviews, plus BBC, Texas...

Great games to type in for: VIC, Atari, TI

Two ZX81 programs

Your Spectrum can read minds — just type in our listing

FREE competition

160 prizes of the latest arcade-adventure from FANTASY SOFTWARE

3D SEIDDAB ATTACK
MOUNTAINS OF KET
NUMBER SKILLS 0-20
MIKRO-GEN
1984

CBM 64s to start 'talking'

Commodore is setting up a network, using phone lines, for users of the CBM 64, plus its new home micros.

Trials are due to start with access restricted to members of the Independent Commodore Products Users' Group and the plan is for public access in late summer

Among the features it will offer telesoftware, free and for sale, information about products, a query hotline and electronic mail Dealers and ICPUG will be offered closed user group status.

It is now called the Commodore Information Tree but its public name will be Compunet The host computer will be a London-based DEC 10 and there

Continued on page 5

When will it all end?

How long have you got to live? Now there's a program for the Spectrum which will give you a prediction — and identify the danger areas in your life.

Author Dr Vernon Coleman, a GP for 10 years, provided the data for How Long Have You Got?, based on facts from research papers and books.

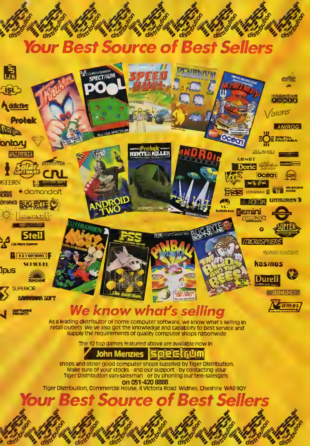
It asks questions about smoking, eating habits, exercise, drinking, sleeping and driving as well as asking if you enjoy your work, whether your mother lived to 80 and your sex

But would users of the pro

Continued on page 5

ANIROG
KONG
ANIROG SOFTWARE

ANIROG
Moon Buggy
COMMODORE 64
J.S.
ANIROG SOFTWARE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John Menzies **spectrum**

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01-437 1002 NOW!

Briefly

Build a city within a time limit — but make sure you pay taxes and interest charges. That's the storyline in City, Terminal's third game for the 48K Spectrum. Priced at £6.95, it can be played by one – four players

Terminal, 28 Church Lane, Prestwich, Manchester M25 5AJ

• • •

Software houses Gemini, Clares, Bourne Educational and BEEBUGSOFT — software arm of the BBC User Group — are planning to bring out software on Hitachi 3in discs, says the distributor of the drives, Advanced Memory Systems. They are to include games, utilities, and home and business packages

Advanced Memory Systems, Green Lane, Appleton, Warrington WA4 5NG

• • •

You are the captain of an outdated spaceship, with characters like Drones and Cellular beings as a crew, in Elephant's graphic strategy game Kosmik Pirate. It costs £5.65 and runs on the 48K Spectrum

Elephant, 41 Heymill Rd, Burnham, Bucks SL1 6NE

• • •

Acorn says its new IEEE interface for the BBC micro can control up to 14 pieces of scientific and technical equipment, including oscilloscopes, voltmeters, spectrum analysers and frequency meters. It consists of a self-contained unit, a ROM which will accept plain English commands, and a 70-page manual. Price £325

Acorn Computers, Fulbourn Rd, Cherry Hinton, Cambridge CB1 4JN

• • •

Learn to touch type in your own time and at your own pace, says the National Extension College which has just produced a typing tutor called All Fingers Go! It features 18 lessons on two tapes for the 32K BBC micro, showing the keyboard and fingers on the screen. The course costs £14.95 and a disc version is available

National Extension College, 18 Brooklands Ave, Cambridge CB2 2HN

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I'm An
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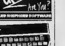
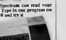
UPSTART
Are You?
RICHARD SHEPHERD SOFTWARE

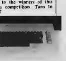


Your Spectrum can read your mind. Type in our program on page 10 and try it

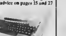


Try the TI program on page 21 — then turn to the software reviews on page 30

We've got 160 copies of Doomsday Castle, Fantasy Software's great new adventure, to give away to the winners of this week's competition. Turn to page 7



Make more of your Commodore 64 with the programming advice on pages 15 and 27



Educational software for the BBC micro and the Spectrum is reviewed on page 13

There are two programs for the unexpanded ZX81 on page 43

ANIROG SOFTWARE

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64 network

From front page

will be local access at 14 points in the UK, cutting phone costs

Next month a viewdata modem to use the network goes on sale Sold as a plug-in black box, it will cost £75 or £100 with a year's free membership of Compunet

Software on ROM will allow software to be downloaded and screen dumps to a black and white printer or to Commodore's MCS801 colour printer, the Seikosha GP 700 with the Commodore badge

It will also handle file transfers between 64s, with error checking The modem will be available from Commodore by mail order

The reason given is that each will have a unique identity so that when Commodore software is downloaded it will run only on that user's micro, using the modem as a security device

Subscription will be £30 a year with a connect-time charge on weekdays between 9am and 6pm It is expected to be less than Prestel charges

Other features will include storage of data — charged per K per day — auto-billing and payment by credit card

John Collins, special software project manager, said links could be made to other databases by third parties and users could start their own bulletin boards Commodore planned to use it to link its UK offices in Slough with its Corby plant

Eventually European users could dial in too

Mr Collins said that although a Commodore network was in operation in America, little material — apart perhaps from some software — would be transferred to the UK network

● Commodore's Magic Voice Speech Module, numbered C64850, should be on sale next month at about £50 Programmable in BASIC and machine code, it has 235 built in words or word-parts and more can be added It will work only on the Commodore 64 and its portable model, the SX64 Two talking cartridges will be available, Gorf and Wizard of Wor, with others to be added

● Also coming soon, the C1542 disc drive — a re-styled 1541 — offering 170K of storage on a 5¼in floppy The SFS 481 Fast Disc Drive for the new Commodore micros is also on the way Prices have not been fixed

● Commodore's UK general manager expects demand for home micros to increase — along with increasingly fierce competition He was speaking after an announcement of world wide sales of $1 billion, more than double the previous year This, says Commodore, means it is producing more computers than the next two largest companies combined

Howard Stanworth said that, with 750,000 Commodores in use in the UK, the company would be seeking to concentrate on software and peripherals which would account for 75 per cent of UK sales by the end of the year

● In a bid to increase sales to schools, Commodore is offering £170 off a package comprising Commodore 64, 1541 single floppy disc drive, the LOGO educational language and Simons BASIC I

Commodore, 675 Ajax Ave, Slough, Berks SL1 4BG

The new Micro Pulse 3in disc drive and the BBC micro

New 3in BBC drive

Micro Pulse is a new 3in disc drive for the 32K BBC micro costing £194

It comes with a double sided 100K utility disc Northern Computers says software on cassette or 5¼in disc can be easily transferred using Micro Pulse Mirror software

Northern Computers, Churchfield Rd, Frodsham, Ches WA6 6RD

□ □ □

Now it's a computer

CBS Electronics is offering to turn Colecovision games players into the new Adem computer

The Expansion Module 3, expected to be priced at about £500, plugs into the console to add a keyboard unit and printer A word processing program is built in

The Adem, now in production in America, is not yet on sale in the UK

CBS Electronics, Headley Rd East, Woodley, Reading, Berks

When will it end?

From front page

gram worry if they had a low "score"?

Dr Coleman, 37, said "I'm not trying to worry people, I'm trying to make them understand and help them I think the greatest cause of worry is ignorance, as I found when I was a GP

"There were home doctor books way back in the 19th century This is just bringing them up to date and reaching the market of people who do not read my books

"Within the obvious limitations, explained in the introduction, it is accurate You could always get run over by a No 10 bus"

Programmer Graham Hill, 18, said "I came out with a life expectancy of 79, but I m a non-smoker and I don't drink But I haven't lived long enough to have things like heart trouble, so it could be nothing like that"

The program is from Eastmead Computer Systems, a partnership of Dr Coleman, Mr Hill and another programmer, Russell Smith, 23

On the same theme, Eastmead has brought out a home and school program called The Complete Guide to Medicine which includes subjects like reproduction, anatomy, nutrition, exercise, early warning signs, emergencies and home treatment

There are quizzes and graphics and movement to help explain in layman's terms how the body works

A third program, First Aid, explains how to deal with emergencies and when to seek professional help

An earlier program, called Home Doctor, is still on sale but it comes on seven cassettes, running on the VIC-20 and ZX81 and each cassette costs £6

In the pipeline is an educational game for the 48K Spectrum based on how drugs affect the body It should be out in a month

How Long Have You Got, at £3 45 for either model of the Spectrum, should also be out soon for the Commodore 64

The other two programs run on the 48K Spectrum The medical guide costs £6 90 and First Aid is £4 60

Eastmead Computer Systems, Eastmead House, Lyon Way, Frimley, Camberley, Surrey GU16 5EZ

You could be on our pages

We welcome programs, articles and tips from our readers.

PROGRAMS must always be sent on cassette. Listings are helpful, but not necessary. Check carefully that they are bug-free. Include details of what your program does, how it works, variables you have used and hints on conversion.

ARTICLES on using home computers should be no longer than 2,000 words. Don't worry about your writing ability — just try to keep to the style in HCW. Articles most likely to be published will help our readers made better use of their micros by giving useful ideas, possibly with programming examples. We will convert any sketched illustrations into finished artwork.

TIPS are short articles, and brief programming routines which we can put together with others. Your hints can aid other computer users.

Competitive rates are paid.

Keep a copy of your submissions and include an SAE if you want them returned. Label everything clearly and give a daytime and home phone number if you can.

Paul Liptrot, Home Computing Weekly,
No.1 Golden Square, London W1R 3AB

Watchdogs rop adverts

Three companies, including Sinclair Research, have been rapped on the knuckles by advertising watchdogs over supplies of advertised products

Two people complained to the Advertising Standards Authority about special offers from Sinclair

One offered a ZX81 starter pack, saying a typical cassette included would be Chess or Backgammon, but that the actual title would vary with availability

The complainant visited several stores but none had yet received supplies of the starter pack and he was told neither of the two cassettes would be included

This complaint was upheld in part after Sinclair said multiple retailers had been supplied centrally with enough stock, but it had no control over distribution to individual stores

A number of the packs included Backgammon, but none included Chess, although retailers might choose to include this.

The ASA reminded Sinclair that unless items were certain to be included they should not be mentioned

The second complaint against Sinclair was upheld because Currys was named in an advertisement but was not taking part in a "printer plus paper" offer

Southend based Solidisk Technology failed to live up to a claim that its ZX81 RAMpack and optional extras would be delivered in seven days — two people waited more than three weeks

Upholding the complaints, the ASA told Solidisk to amend its delivery claim, but that it should be no longer than 28 days

Anik Microsystems, based in Northampton, offered a free 10-game cassette with its California Gold Rush and Yahtcee games

But a complainant said no free tape arrived with his copy of California Gold Rush He was told one would be sent when Anik received stocks

He contacted the ASA after waiting a further month

The ASA upheld the complaint and its report comments "The advertiser failed to respond to the authority's approaches and media organisations were warned accordingly"

Advertising Standards Authority, Brook House, Torrington Place, London WC1E 7HN

Board games on micros

Three well-known board games — Cluedo, MasterMind and Scrabble — will be on Commodore 64 cassettes by mid-April, with Spectrum, BBC and Oric versions to follow

The deals were signed after months of talks, said Peter Deutsch, 31, managing director of a new company, Winchester Holdings, which will market the games under the name Leisure Genius

The first agreement was made by Jon Baldachin, 32, the company's software development director, for Scrabble and they then decided to approach others

Mr Baldachin said the policy would be to link good quality software with established names whose owners wanted to break into the software market

Mr Deutsch said "They are all good names and all have been through the test of time They will convert nicely"

The cassettes will cost £9-£15 and discs, at first for the Apple and Commodore 64, will be £19-£25 Scrabble will not be produced for the Spectrum because Psion has the licence

Later in the year the company plans a range of educational software under the name Little Genius in conjunction with Waddingtons Games, owners of Cluedo

Winchester Holdings, 3 Montagu Row, London W1H 1AB

"Spaceman" Alan Hobbs, of Microdeal

'Spaceman' stirs shoppers

This man caused something of a stir when he walked along Tunbridge Wells High Street and other town centres

It is all part of a publicity campaign by Microdeal to promote its Space Shuttle game The man in the space suit is Microdeal's van sales manager Alan Hobbs

Microdeal, 41 Truro Rd, St Austell, Cornwall PL25 5JE

Briefly

Dates for your diary the first Sinclair Education Exhibition, March 28-30, Central Hall, Westminster, C R S Computer Club computer fair, 11am-5pm March 3, Norton School, Letchworth, fifth London Computer Fair, held by the Association of London Computer Clubs, April 19, 21 and 23, Central Hall, Westminster; Acorn User Exhibition, August 16-19, Olympia, PCW Show, September 19-24, Olympic 2, formerly the Empire Hall, recently occupied by a carpet retailer and now re-styled

Texas TI99/4A

ARENA III (EXT BASIC) £4 95
Space war Defend your ship from attacking aliens Battle your way to Arga To land you *must* blast out a landing strip Descend from ship through treacherous meteor storms Laser cannon, neutron bombs space walks This game has the lot

PINBALL + CUBITS (EXT BASIC) £4 95
Two games on one tape A realistic pinball machine All the excitements of the real thing Cubits A test of skill and memory for those who like a challenge

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"ON YOUR BIKE" says the Boss Wobble through dense countryside Post letters empty postboxes pick up parcels Have you time to do it before the post office does the sorting? Ride the regulation bike (with bell) It is not easy! Extra screen for High Scores unless you are sacked first! DEALER ENQUIRIES WELCOME

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14 Bridgwood, Brookside, TELFORD, Shropshire TF3 1LX

Enter now: there's 160 chances to win a great new arcade-adventure from Fantasy SOFTWARE

You've got 160 chances to win a great new arcade-adventure from Fantasy Software in this week's free competition.

It's called Doomsday Castle, runs on the 48K Spectrum and is a follow up to the best seller, Pyramid. Both were written by Fantasy Software co-director Bob Hamilton.

Your mission is to find and collect six ancient stones and use their force against the evil Scarthax to destroy Doomsday Castle, hopefully escaping yourself before the final cataclysmic explosion.

You will have to battle your way through a complex labyrinth of 74 inter-connected halls and passages.

On the way you'll meet beautifully animated characters like the Garthrogs, the Orphacs, Kamikaze Urks, the nasty Googly Bird and many others.

Doomsday Castle is compatible with all leading joysticks and — if you are not among the winners — costs £6.50 in the shops.

Fantasy Software has set itself the policy of offering value-for-money real time adventures. And to ensure high standards, the company says it will only release a few top-quality games each year — not several dozen tapes which are only "so-so".

- Next month Pyramid will be available for the Commodore 64 at £5.50

Closing date for the competition is Friday February 17 — but why not send your entry off to us today?

How to enter

Look carefully at the two cartoons on this page to find the differences between cartoon A and cartoon B. Circle the differences on cartoon B with a ballpoint pen.

Then fill in the coupon with your name and full address and the number of differences you found.

Remember, the coupon will be used as a label if you're a winner, so write very clearly.

Cut around the broken lines and seal both cartoon B and the coupon in an envelope — and write clearly on the back the number of differences you found.

Post your entry to Fantasy Software Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB.

Entries close at first post on Friday February 17. The winning entries will be 160 correct entries opened at random.

You may enter as many times as you wish, but all entries must be on the official coupon and cartoon — copies will not be accepted — and in separate envelopes.

The solution and the names of the winners will be published in Home Computing Weekly and the prizes will arrive from Fantasy Software within 28 days of the publication of that issue.

Important note: please follow carefully the guidance in this How to Enter section. Entries which do not abide by the guidelines cannot be considered.

The rules

The 160 winners of copies of Doomsday Castle, for the 48K Spectrum, will be those whose correct entries are chosen at random after the closing date, first post on Friday February 17 1984.

Coupons and copies of cartoon B which are not completed correctly and envelopes without the number of differences found on the back will not be considered.

Entries will not be accepted from employees of Argus Specialist Publications, Fantasy Software and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies.

The winners' names and the solution will appear in Home Computing Weekly. The editor's decision is final and no correspondence will be entered into.

Fantasy Software Competition

Entry Coupon

Name________________________________

Address______________________________

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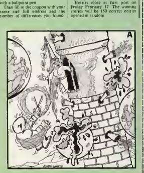
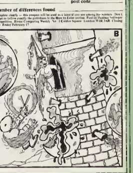
Number of differences found ______________

Complete clearly — this coupon will be used as a label if you are among the winners. Don't forget to follow exactly the guidelines in the How to Enter section. Post to: Fantasy Software Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Closing date: Friday February 17





Into the computer arcade

Our reviewers star-rate five new arcade-style releases for the 48K Spectrum. Read before you buy

Wild West Hero £5.90

Timescape, 1 Virginia Gdns, Fairways, Milngarie, Glasgow G62 6LG

You're a trigger-happy lawman pitted against wave after wave of mean hombres. Blow away one gang and another appears. As if 80-plus on screen bandits wasn't enough, you have to contend with Killer Cacti and Treacherous Trees!

There is the incentive of a bonus life at 20,000 points and at each 10,000 thereafter. So, the more baddies you send to Boot Hill the better.

Graphics are excellent particularly the bad guys. Unlike many the sound effects don't detract from your enjoyment. Adequate instruction are wittily presented on the inlay. There are options for joystick and — a nice feature — two players.

If I have a complaint it's that the screen sometimes is too crowded, though generally layout is effective.

Comparison with others are obvious, but this is a winner with lots of addictive appeal. **C.C.**

instructions	90%
playability	90%
graphics	90%
value for money	90%

★ ★ ★ ★ ★

Deffendar £6.95

Mikro-Gen, 24 Agar Cres, Bracknell, Berks

Mutant aliens are at it again, intent upon abducting any human witless enough to wait around on mountains. Only your spacefighter and laser stand between Earth's destruction and billions of assorted alien ships.

This time Earth's in big trouble, because you are your spacecraft are past their best. Your speed is slow, your laser lazy and explosions could be mistaken for TV static. Even the aliens seem apathetic, and the humans are apparently indifferent to danger.

You may gather I was not overly impressed. Nor was my teenage expert and looking at the spectacular explosions, speed, graphics and sound on his favourite versions, this one fell even lower in my regard.

Houses issuing new versions of old themes should not assume everyone knows how to play. Cassette instructions (also showing the keys used before you load) would be welcome. And display loading instructions, always. Remember, there are new Spectrum owners every day.

You can, and have, done better, Mikro-Gen.

D.C.

instructions	5%
playability	50%
graphics	50%
value for money	30%

★ ★

3D Seiddab Attack £5.95

Hewson Consultants, 60A St Mary's St, Wallingford

In the shops, this program may be called 3D Space Wars or War of the Worlds as all three titles were on the review copy. But 3D Seiddab Attack looks like the latest version.

The 3D does not mean you have to wear those uncomfortable specs supplied with some "three dimensional" games. You command a drone, something like a tank, which has to shoot down waves of advancing ships. They are small to begin with (in the distance) and larger as they get closer. The effect is quite reasonable and it means the aliens are hardest to hit when they can cause you least damage.

They also move from side to side, but so can your turret, and the whole drone can be steered around the city following a small maze-like map in the display.

Graphics are some of the best I've seen in this kind of game for the Spectrum and movement of gunsight and ships is quite convincing. The overall effect is a little like the 3D tank battles so popular in arcades in far off days, and very playable it is too.

I found the keyboard controls a little difficult to handle and the instructions could be improved. However, there is an option for Kempston-style joysticks and these are needed to fully enjoy the game. **N.W.**

instructions	40%
playability	80%
graphics	95%
value for money	80%

★ ★ ★ ★

Exterminatar £5.50

Torg Software, Orchard End, Furzehill, Wimborne, Dorset BH21 4HT

Annihilating unarmed defenceless spacefreighters, carrying innocent war victims, who can only ram you in retaliation, must be the most tasteless scenario ever! You crave promotion from Cadet to Space Admiral — Level 12 and, since score is affected by time taken, must complete your murderous task quickly.

Your nine lives are lost by failing to complete missions in the time limit or, presumably, being rammed, and latest rank is displayed at each mission end. Mysteriously, the life display gained a life or lost several for no apparent reason and runs past nil to 98. Space bugs?

Directional movement uses Q, 3, 4 and 5 — thrust, fire and reverse are on O, 1 and M, a combination which, as the instructions gleefully point out (twice), will be difficult to master and carry the suggestion that, if you can't get the knack, you should throw out your Spectrum.

With my programmable joystick and ignoring thrust and reverse I reached Space Admiral Level 1 with ease and retired to less boring occupation.

The high-resolution 3D graphics are excellent. A pity that obvious expertise is wasted to gain the doubtful distinction of simultaneously pleasing both sadists and masochists. Even for them it will not be a long lasting pleasure. **D.C.**

instructions	80%
playability	50%
graphics	90%
value for money	50%

★ ★

Paradroids £5.95

Mikro-Gen, 24 Agar Cres, Bracknell, Berks

You have the task of defending a nuclear reactor from invading 'droids, by operating a laser, which you can move up and down a column in the centre of the screen.

There are various platforms up each side of the screen, off which the 'droids parachute, falling to the bottom of the screen where they are whipped round a circuit in the reactor, to be transmuted into flying plus signs which float up and down shooting at your laser base. If you can shoot the droids while they are in the parachute stage of their metamorphosis, this is desirable since it prevents them from turning into nasty plus signs.

Selectable difficulty and hall of fame are included, as are multiwave attacks. However, I could not find any user-definable keys as promised by the cassette insert and I was a little disappointed to find each new wave attack was much the same as the one before.

On the plus side good use was made of colour and sound, and the game balance of progress versus defeat was about right. The plot is also fairly original.

M.B.

instructions	80%
playability	80%
graphics	80%
value for money	75%

★ ★ ★ ★

THREE EXCITING NEW GAMES IN THE *Live Wire* SERIES FOR THE 64 FROM SUMLOCK MICROWARE

Live Wire
GRIOTRAP

GRIOTRAP 64

We promise you won't be able to turn it off! It's a real skill tester and loads of fun to play!

Play with the Keyboard or Joystick. Choose your own operating keys with our **User Definable System.** Compete with an opponent by selecting **Two Player Mode...** Great graphics, super sound effects in the *Livewire* tradition including a selectable Melody Mode where the tune is available at the touch of a key and Melody On is indicated by a quaver graphic.

Program No. LWO4 £8.95

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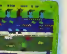

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Not only does your Spectrum think, but with Ray Elder's program it can tell you what's going through your mind, too

I have long been fascinated by so called computer intelligence and I have seen and even written programs which try to simulate human responses

However, in this program I've gone one step further your computer will read your mind!

All you have to do is to think of a number between 1 and 63 inclusive and then, when the computer displays a sequence of numbers, just tell it if it appears.

There are only six cards or groups of numbers and the computer will unerringly pick the correct one from the 64 possible numbers after only six clues!

I wrote this program on the Spectrum but it will easily transpose to the ZX81 or any other computer. The notes will help you to convert the program

Actually this is not based on Extra Sensory Perception at all, but on a very simple mathematical process. See if you can work out why and how it works, thinking in Binary helps

Nevertheless unless you know the secret, this little program is quite fascinating and will amaze your Mum, Dad, Auntie and friends.

Hints on conversion

10 the POKE sets the Spectrum's keyboard to CAPS LOCK — omit. Separate the two LET commands into two lines 10/15

20 write in capitals, create a new line 25 GOSUB 200

40 amend the display to suit the '' is a newline command

70 separate the two commands create a line 75 GOSUB 1000

130 separate the commands, make a new line

150 separate the three commands, note each line must start with IF

155 omit FLASH, separate commands

220 separate the two commands

1000 separate the three commands

1015 separate two commands, remember to start with IF's

1050 separate two commands

D
LEARN TO USE THE SPECTRUM COMPUTER

```
  9 REM Set up varibles
 10 POKE 23658,8: LET x=0: LET
b=1
 19 REM Instructions
 20 PRINT  AT 8,2;"Think of a n
umber between"; AT 10,2;"1 and 6
3": GO SUB 200
 40 PRINT  AT 8,0;"I will now d
isplay six sets of"''"numbers, i
f your number is among"''"them p
ress Y, if it isn't then"''"pres
s N"
 50 GO SUB 200
 69 REM main loop
 70 CLS : GO SUB 1000
 80 PRINT ''"Is your number her
e ? (Y or N)"
 90 LET i$= INKEY$
100 IF i$ <> "Y" AND i$ <> "N"
THEN  GO TO 90
110 IF i$="Y" THEN  LET x=x+b
120 IF b=32 THEN  GO TO 150
130 LET b=b*2: GO TO 70
149 REM solved '
150 CLS : IF x=0 THEN  PRINT  A
T 8,0;"You made a mistake or che
ated ''": GO TO 160
155 PRINT  AT 10,0;"You were th
inking of the number": FLASH 1:
PRINT  AT 12,15;x: FLASH 0
160 PRINT  AT 16,0;"Press any k
ey for another go"
170 GO SUB 205
180 RUN
199 REM S/R to wait for key
200 PRINT ' TAB 2;"Press any ke
y to continue."
205 IF  INKEY$  <> "" THEN  GO
TO 205
210 IF  INKEY$ ="" THEN  GO TO
210
220 CLS : RETURN
999 REM Print number lists
1000 LET c=1: LET n=b: LET s=1
1010 PRINT (" " AND n<10)+" ";n;
" ";
1015 IF s=8 THEN  LET s=0: PRINT
 '''
1020 IF n >= 63 THEN  RETURN
1030 LET n1=n+1+(b AND c=b)
1040 IF c=b THEN  LET c=0
1050 LET c=c+1: LET n=n1: LET s=
s+1
1060 GO TO 1010
```

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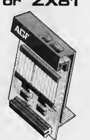
Once configured this can be marked on a Quick Reference Programming Card for storing with the game As the programming is *not* power dependent the interface retains the last configuration made and can be immediately used when next switched on.



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Ballooning 48K Spectrum £9.95

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At last, an education program which isn't drills 'n' skills and specifies exactly what it aims to do, namely teach the scientific principles involved in flying a hot air balloon and encourage observation, experimentation and research around the subject.

Attractively packaged, a large fully illustrated colour manual with 17 pages sets out how to use the accompanying tape, and gives advice to adults about helping the student, a history of ballooning, present day uses of balloons, the scientific principles, route planning exercises, make-it-yourself plans and lots and lots of ideas for family activities.

If this sounds good, wait till you use the tape. It contains a ballooning flight simulator easily up to the standard of the Psion aircraft job, with three distinct phases. First training, then testing and finally a mission complete with instructions.

The graphics are really superb and the game tricky and addictive. The sneaky bit is that you need to know the scientific principles to be expert on the simulator, and so back to the book. This may be rather expensive, but you'd pay this much for the program alone from Psion.

What you do get is well written, soundly based and expertly produced. And if you're prepared to work with your eight-12 year old, hours of enjoyment. **D M**

instructions	100%
ease of use	100%
display	100%
value for money	90%

★ ★ ★ ★ ★

Launching Logic BBC 32K £14.95

Shiva, 4 Church La, Nantwich, Cheshire CW5 5RQ

This is Logic 1 in a set and is part of the First Maths Programme for young children. The whole foundation of this program is that children should be familiar with the logic blocks schools have used for some years now to teach logic.

They are probably the only tools most schools have for use in this area and are probably very under used. This program should change this.

But there is still a basic flaw in the concept of these programs. I find it very hard to believe that it is better to teach ideas like this using a computer than by using the objects themselves. If the children have to be familiar with them to use the programs then why not carry on using them for the bulk of the teaching and leave the computer alone?

Having said all that, the programs on the tape do a very good job at laying the foundations for the work on sets that will follow. The graphics are good and simple enough for children to understand easily.

It would be nice if those games requiring two sequential key presses would indicate which key had already been pressed. At the moment there is no recognition of the input whatsoever. **D.C.**

instructions	75%
ease of use	80%
graphics	90%
value for money	70%

★ ★ ★ ★

Lift Off With Numbers BBC 32K £14.95

Shiva, 4 Church La, Nantwich, Cheshire CW5 5RQ

This is the first package of a major project of software publishing called The First Maths Programme. All together there will be 11 software packages on numeracy and logic aimed at children aged five to eight.

The claim is that the whole scheme is carefully graded to provide a thorough grounding in skills required to become numerate. For this reason it is hard to decide whether a particular pack has contributed, but I do assure you that the ideas and contents of this package can certainly do no harm, especially if used in a supportive and careful way.

Each of the packs comprises five or more programs and this contains the following. Washing teaches one-to-one correspondence and sorting into colour and shape sets. Cakes brings concept of cardinality while Rockets has an ordinal component.

Bingo involves recognition of numbers 1-6 and Ladybirds the numbers bonds to 10 as well as ordinal and cardinal concepts.

In all this is the beginning of a well planned set of programs for young children just starting to get to grips with numbers. Documentation is very good with plenty of extra activities suggested too.

The price is a little too high.

D C

instructions	95%
ease of use	80%
graphics	60%
value for money	70%

★ ★ ★ ★

Number Skills 0-99 BBC 32K £9.95

Longman, Burnt Mill, Harlow, Essex

Like its sister program, Number Skills 0-20, this may best be described as an animated text book full of sums for the user to answer. It does, however, have one extra facility, the ability to give help if needed or requested.

As the title suggests, the problems all involve numbers less than 100 and it covers both addition and subtraction.

The help given involves the display of the sum using counters in boxes to represent the columns of place value, and the regrouping or exchange of values as required. This is a good technique and is in line with modern practice in schools.

But, as with all software of this type, I would advise parents to seek the advice of the children's teachers before using the program. Months of school work can end in confusion if this is not done. There is a need to do this to find out the subtraction method your child uses too, as the program, wisely, provides two methods.

Unlike the sister program, this one does not allow you to get a problem wrong forever, it only gives three attempts before moving on to the next program. A good but unexciting program overall.

D C

instructions	65%
ease of use	60%
graphics	60%
value for money	80%

★ ★ ★

Number Skills 0-20 BBC 32K £9.95

Longman, Burnt Mill, Harlow, Essex

If the idea of an animated text book of sums appeals to you and is your idea of the way to excite children with numbers then this could be for you. It isn't mine and I intend to use this program in very small doses indeed.

That said, what the program does it does very well and the help facility is an excellent feature. The program covers addition and subtraction only but has several difficulty levels and presentation/answer styles. It is possible to select numeral output or word output, eg either 3 + 6 or three + six, and to accept either for input also. This too is a nice feature.

Using the help facility means the number line at the bottom of the screen is used to show the makeup of the answers. This is well done and gives the right sort of help. But there is a problem if you get an answer wrong and then fail to get it right you are never allowed onto another problem. You spend all your time watching the explanation.

This is a programming mistake and should be remedied in some manner (my suggestion is that after, say, three attempts the program should stop until the wayward child gets some human help).

Think carefully before use and be prepared to step in to help when using this program.

D C

instructions	65%
ease of use	40%
graphics	30%
value for money	40%

★ ★

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Our Extended 64 BASIC: How to make it work for you

If you typed in the listings from the last two issues, you will now have a powerful Extended BASIC for your Commodore 64.

This final part of Extended BASIC gives some example programs showing how to use the commands well

Polar Graphs can draw most polar functions at any magnification, through a range of zero to 2pi (this can easily be changed), and apart from its educational value, its main advantage is that it is the easiest way to draw a good heart on a computer (St Valentine beware!)

Teletext draws a replica of the Ceefax-type screen to show the versatility of the command and how it can be used well As the text command is so complex and non standard, it is not worth converting it for other computers

British Isles is the most useful program, as it provides an accurate (error is one per cent) database for drawing maps of this area

The program is fairly simple and is easily convertible to other machines with high resolution graphics Also, the database should be useful and is easy to expand (most of Europe can be digitised with positive numbers)

For those wishing to expand the map, the following details will be useful

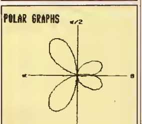
The map used was a Conical Equidistant Projection of Europe, scale 1:16 million (0,0) is at 18 degrees 20 minutes west, 60 degrees north (400,400) is at 5 degrees east, 49 degrees 17 minutes north

The program can be made to draw a section of Britain to any sensible magnification, and gives the scale as it would appear on a 14 inch television

Finally, for all those wishing to convert the programs for other computers, all the commands are standard except those of Extended BASIC (these begin with SYS) The simplest way to convert these is to look in last week's part, where full details are given.

Polar Graphs — will draw most polar functions

```
5 REM*POLAR GRAPH DEMONSTRATION*
6 REM*      BY DAVID REES      *
10 MODE=51820 GCOL=51770 PO=51334
20 GMOVE=52039 LINE=51754 GTEXT=52657
30 SYSGCOL 5,0 SYSGCOL 6,0
100 SYSMODE 0,0,1
110 SYSGCOL,1,1
120 SYSGMOVE,159,17
130 SYSLINE,2,159,183
140 SYSGMOVE 76,99
150 SYSLINE 2 242,99
197 REM* M SETS RADIUS OF 1 UNIT *
198 REM*IF THE GRAPH WILL NOT FIT*
199 REM* ON THE SCREEN REDUCE M  *
200 M=25
210 Y=99-M SYSPO,2,158,Y Y=99+M SYSPO 2,160,Y
220 X=159-M SYSPO,2 X,100 X=159+M SYSPO 2 X,98
300 SYSGTEXT,31,12,230,0,42
310 SYSGTEXT,0,12 230,0,94
320 SYSGTEXT 15 1,220,0,94
325 SYSGTEXT 19,1,220 0,47
330 SYSGTEXT 20 1 220,0,50
340 SYSGTEXT,16 22 230,0,51
345 SYSGTEXT,19,22,230 0,94
350 SYSGTEXT,20,23,230 0,47
355 SYSGTEXT 21 23,230,0 50
400 A$=" POLAR GRAPHS "
410 FORN=0TO13
420 C$=MID$(A$,N+1 1) C=ASC(C$)
430 C=C+64*((C>64)+(C>128))
440 SYSGTEXT N,0 226 2,C
450 NEXT
899 REM*DEFINE THIS FUNCTION*
900 DEFFNX(X)=2*SIN(2*X)-SIN(3*X)
950 L=80/M N=0
960 R=FNX(N) S=SGN(R) R=ABS(R)
970 IFR>LTHENR=L*S
980 X%=R*M*SIN(N)+159 Y%=R*M*COS(N)+99
990 SYSGMOVE,X%,Y%
1000 FORN=0TO2.001*πSTEPπ/32
1010 R=FNX(N) S=SGN(R) R=ABS(R)
1020 IFR>LTHENR=L*S
1030 X%=R*M*SIN(N)+159 Y%=R*M*COS(N)+99
1040 SYSLINE,2,X%,Y%
1050 NEXT
1100 GETA$ IFA$=""THEN1100
1110 SYSMODE,6,0,0 PRINT"♥"
```



Screen dump of how Polar Graphs looks

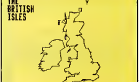
Teletext — for a Ceefax-style screen

```
2 REM* DEMONSTRATION OF TELETEXT*
10 MODE=51828 GCOL=51770 GMOVE=52039
20 LINE=51754 GTEXT=52657
30 POKE51,0 POKE52,31 POKE55 0 POKE56,31
40 SYSGCOL,5,0 SYSGCOL 6,0
100 SYSMODE,0,0 1
110 A$="  1198 64'-♠♠ 000  TUE 27 DEC  "
120 C=16 X=0 Y=0 H=0 CH=1 R=0 GOSUB1000
200 A$=LEFT$(TI$,2)+" "+MID$(TI$,3,2)+" "
210 A$=A$+RIGHT$(TI$,2) C=80 X=32
220 Y=0 GOSUB1000
300 A$=" THIS IS COMMODORE 64 TELETEXT "
310 C=46 Y=2 X=4 H=1 CH=0 F=1 GOSUB1000
400 A$=" ♠ NEW MODE FOR THE COMPUTER "
410 C=110 Y=5 X=5 H=0 CH=1 R=1 GOSUB1000
500 A$="DEVELOPED BY ♠> -- ♥ USING THE NEW"
510 C=224 Y=7 X=1 H=0 CH=1 R=0 GOSUB1000
600 A$="EXTENDED BASIC PROGRAM IN HOME"
610 A$=A$+" COMPUTING"
620 C=224 Y=8 X=0 H=0 CH=1 P=0 GOSUB1000
650 A$="WEEKLY."
660 C=224 Y=9 X=0 H=0 CH=1 P=0 GOSUB1000
700 A$="  MORE FROM 64'-♠♠ IF YOU PROGRAM IT "
710 A$=A$+"!  "
720 C=114 Y=24 X=0 H=0 CH=1 R=0 GOSUB1000
790 C=80 X=32 Y=0 CH=0 H=0 R=0
800 K=V V=INT(VAL(TI$),60)
810 IFK=VTHEN800
820 A$=LEFT$(TI$,2)+" "+MID$(TI$,3 2)
830 X=32 GOSUB1000
880 A$=RIGHT$(TI$,2) X=38 GOSUB1000
900 GETA$ IFA$=""THEN800
909 REM*...[CLR HOME]*
910 SYSMODE,6,0 0 PRINT"♫"
998 END
999 REM*PRINT ROUTINE*
1000 A=INT(C/RND1)+2*(HAND1)) L=LEN(A$) Y=INT(Y)
1030 FORN=1TOL B$=MID$(A$,N,1) B=ASC(B$)
1040 D=B+32*(B*(B 63)+2* P 191)) X%=X-1+N
1050 D=D+128*P+256*CN SYSGT  % Y C A D NEXT
1060 RETURN
```

British Isles — most of Europe can be drawn, too

```
3 REM*BRITISH ISLES"
10 MODE=51823 GCOL=51770 GMOVE=52039
20 LINE=51754 GTEXT=52657
30 SC=4360000 E=319 F=199 G=-10 H=240 I=220
100 SYSGCOL,5,0 SYSGCOL,6,0
110 SYSMODE,6 0,0
120 PRINT"♫"
130 INPUT"MAGNIFICATION (0.1-9.9)" M
140 IFM<0.1ORM>9.9THEN130
150 M=INT(M*10) 10
160 PRINT"*PLEASE ENTER START CO-ORDINATES"
170 PRINT"IN A RANGE BETWEEN -4000 AND 4000"
180 INPUT"X",CX
190 IFCX<-4000ORCX>4000THEN180
200 CX=INT(CX)
210 INPUT"Y",CY
220 IFCY<-4000ORCY>4000THEN210
230 CY=INT(CY)
400 SYSMODE,4,1 1
405 FORMM=0TO7
410 READX,Y X%=X*M+CX Y%=Y*M+CY IFY=-1THEN610
420 P=(X%<G)+(Y%<G)+(X%>H)+(Y%>I)
430 IFR<>0THEN410
440 IFX%>ETHENX%=E
450 IFX%<0THENX%=0
460 IFY%<0THENY%=0
470 IFY%>FTHENY%=F
480 SYSGMOVE,X%,Y%
500 FORN=0TO999
510 READX,Y X%=X*M+CX Y%=Y*M+CY IFX=-1THEN610
520 R=(X%<G)+(Y%<G)+(X%>H)+(Y%>I)
530 IFR<>0THENK=1
540 IFX%>ETHENX%=E
550 IFX%<0THENX%=0
560 IFY%<0THENY%=0
570 IFY%>FTHENY%=F
580 IFK=1THENK=0 SYSGMOVE,X%,Y% GOTO600
590 SYSLINE,3,X%,Y%
600 NEXTN
610 NEXTMM
620 V=INT(SC/M/10000)*10000
800 A$="1 "
810 B$=STR$(V) L=LEN(B$) A$=A$+RIGHT$(B$ L-1)
820 X=0 GOSUB900
830 A$="SHIFT  X="+STR$(INT(CX))
840 X=16 GOSUB900
850 A$="Y="+STR$(INT(CY))
860 X=32 GOSUB900
870 GETA$ IFA$=""THEN870
880 SYSMODE,6,0,0 PRINT"♫"
899 END
900 L=LEN(A$) C=230
910 FORN=1TOL C$=MID$(A$,N,1) D=ASC(C$
920 IFD>63THEND=D-64
930 X%=X+N-1 SYSGTEXT,X%,0,C,1 D NEXT RETURN
1000 DATA300,325,310,325,315,320,325,330
1010 DATA325,337 315,340,314,343 300 350
1020 DATA290 345,275 347,260,343 262 345
1030 DATA267,349 262,351,252,349 262,345
1040 DATA260 343 250,350 230,350,215 355
1050 DATA214 360,208,365,200 360 198 355
1060 DATA180 370,175,365,170 367 165 365
1070 DATA180,350 190 345,192,335,200 325
1080 DATA200,330,325,332 225,325 235 324
1090 DATA240,322,245,314,240,316,236 330
1100 DATA221,325 215 325 207 317 200 320
1110 DATA202,316,200,310,192,311,189 315
1120 DATA187,315,182,310 185 308 182 302
1130 DATA205,295,207,285,207 274,209,274
1140 DATA209,273 210,272 205,273 207 272
1150 DATA206 273 200,275,195 273 202 270
1160 DATA205,265,200,265,200,295 205 285
1165 REM
1170 DATA210,260,205 265,229 260,231 262
1180 DATA221,260,233 261 234,260 222 258
1190 DATA235,255 223,253,235,250,227 232
1200 DATA235,233 222 219 237 205 232 204
1210 DATA230,208,229 213,226 212 215 210
1220 DATA210 210 205 215,196,207 195 213
1230 DATA190,200 205,183 192,170 192 165
1240 DATA191,165,191,170,188 185,185,184
1250 DATA186 170,193,145,199 152 175 155
1260 DATA180,150,178,145,176 146,186,125
1270 DATA184,120 170,115,190 105,190 120
1280 DATA190,100 200,100 200 90,202 90
1290 DATA205,75 225,79 245 75,241,65
1300 DATA225 100 227,105 220,115 225 110
1310 DATA242,112 260,112,265,130,242 155
1320 DATA253,165 231 160,235,170,242,166
1330 DATA263,185,265,200,270,219,280 221
1340 DATA290 258 292 236 291,287 295,255
1350 DATA290,253 300 265 300 270 293 275
1360 DATA300 290 305 275 320,276 327 284
1370 DATA330,293,326 300,325,305 317 309
1380 DATA319,311 317,312 321,315 310 322
1390 DATA300,325,-1,-1
1400 DATA195,236,200 227,207,220,207 229
1410 DATA195,235 -1,-1
1420 DATA187,104,190 96,187,92,187,85
1430 DATA185,77,185,87,187,104,-1,-1
1440 DATA157,107,165,106,161,115,157,107,-1,-1
1450 DATA157,115,160,115,160,125,157,125
1460 DATA157,115,-1,-1
1470 DATA240 70,242,58,252,60,250,72
1480 DATA240,70,-1,-1
1490 DATA275,43,276 32,270,31,272,24,285,5
1500 DATA286,15,275,43,-1,-1
1510 DATA160,290,135,290,124,302,95,310
1520 DATA85,306,95,300,75,302,65,295
1530 DATA75,293,87,285,75,285,85,280
```

```
1540 DATA85,275 100,270,85,270,100,245
1550 DATA110 245,110,240,95,238,85,242
1560 DATA98,228,90,228,90,210 120 216
1570 DATA130,210,110,202,130,190,150,185
1580 DATA175,190,185,217,165,230,170,265
1590 DATA155,285,160,290,-1,-1
```



```
1.0720000   SHIFT: X= 60    Y= 0
```

The British Isles, created with Extended BASIC and this week's program

Micro Tip

Graphics designer

Here's a tip for those of you who currently design their user-defined graphics using little scraps of paper

It's a re-usable user-defined graphics pad, which can be made from Formica offcuts from the local DIY shop, from ICI white perspex (about £5 a square foot), or simply from one side of a white plastic ice-cream container

You'll need a square about five inches per side On the plastic mark a grid of eight by eight blocks using a freezer pen or other **Indelible** marker. Or you can do as I did and use thin strips of black tape

Leave plenty of room at the top of the grid to write on — about an inch

Now to mark in the bit values at the top. Starting with the top left hand corner, write 128 above that square with the indelible pen

Move to the square to the right and label it 64 Then over the following squares, moving from left to right, mark in 32, 16, 8, 4, 2, 1

To use the graphic designer, you just fill in the blocks on the grid to make the graphic character you want, using a **washable** pen Start at the top line of squares and add up the values of the coloured squares, using the numbers at the top Then jot them at the side of the grid, again using washable pen

Do the same for each line in the grid This will give you the data you need for your UDG When you have finished, rub a damp cloth over the grid to clean it off

Peter Doggett

GEM SOFTWARE
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Give these some thought

Games that tax your mind rather than your reactions. Adventure and strategy games rated for you. All are for the 48K Spectrum

Mountains of Ket
£5.50

Incentive, 54 London St, Reading RG1 4SQ

A traditional adventure, the first of a trilogy, this is not a remarkable offering yet is certainly much better than a number I have played

It is primarily a text adventure though small graphics add a little flavour, and there is none of the "artificial intelligence" becoming popular in games like The Hobbit and Valhalla

However, the designer has considered a large number of options and constructed quite a difficult yet realistic puzzle For example, you are allowed to fight almost any creature you meet, but if you make a silly choice (such as attacking a villager in sight of his fellows) even if you win the fight you will probably lose the game

Fighting is just one option that makes the puzzle aspect more interesting, as is the need to eat periodically to keep up your strength While not the main elements of the game such features make it feel more realistic

There are none of the misspellings that dog so many adventures, nor the tatty screen displays, nor the heart-stopping program-crashing bugs (or none that I could find) So if you are looking for a professional game in a competitive genre, especially if you want value for money, I can heartily recommend this adventure

N W

instructions	80%
ease of use	90%
display	80%
value for money	95%

★ ★ ★ ★ ★

Usurper
£6

Assassin, 10 Ash Rd, Leeds LS6 3JF

Usurper is claimed as the first multi-player adventure game with one 10 players on 48K and one six with 16K

If you enjoy an adventure game where you just press keys to enter different locations and have a report on the screen after each move then this game is quite exciting The object is to overthrow a king, putting yourself in his place You have 100 days, each move you make being a day However on your journey you will be meeting the usual problems fighting trolls, giants, thieves sand sharks etc Locations are arrived at by just pressing its initial i e [illegible] v village and so on

You all start the journey, with the same advantages, strength gold provisions spirit and one follower On the journey you may have to replenish either and of course this sets into your gold reserve, but you may also be blessed by a priest in the temple who can be very helpful at times

There is also a second game played using a large map provided with the cassette Instructions for both come on the tiniest piece of paper with extremely small type

On screen scoring should keep interest going

You will at times get sound effects after a fight and flashing on the screen should you win

C McL

instructions	45%
playability	45%
graphics	n/a
value for money	75%

★ ★ ★

1984
£5.50

Incentive, 54 London St, Reading RG1 4SQ

Here is a game of a different kind If you're tired of gobbling power pills, alien bashing or killing trolls you might like to try your hand at governing the country for a while

1984 is partly a fun game and partly a serious economic simulation It is not detailed enough to be a full working model of the economy, but is far too complicated for me to succeed with You take the role of Prime Minister for three terms of office The best I could manage was one term and then I had a yearly rating of minus six inflation running at 20 per cent and income tax at 43 per cent Maggie, I take it all back

It requires a great deal of thought but no real knowledge of government or economics If you attempt absurd strategies you will usually be told off If you receive too many of these yellow cards then the country gives you a red one and you have to resign

The game is as compulsive as any arcade fodder and also mildly educational though I do not think enough principles are explained and some of the mechanisms are rather too simple, in particular the pure guesswork used in wage bargaining

N.W.

instructions	80%
ease of use	90%
display	90%
value for money	95%

★ ★ ★ ★ ★

Battle 1917
£6

C.C.S., 14 Langton Way, London SE3 7TL

"The computer age's answer to chess" boasts the blurb on the inlay of Mark Lucas' game

In my view nothing can beat the classic board game of chess and this did not change my opinion although well programmed and entertaining

A 21 × 32 board shows a map (which unlike chess changes at the beginning of each game) Two generals each have artillery, infantry, tanks and a king at his command The object is, surprise surprise, to capture the enemy's king

As each player moves the changing battlescene is displayed I find it easier to move chess pieces than grapple with Spectrum keys Minefields barbed wire and what looks like water form other hazards, and these do add to the game now and again it is necessary to make a tactical retreat across a minefield and risk being blown up

Well designed and quite entertaining when played by bitter rivals, but for me the most engaging part was the excellent animated instruction sequence However, even after I had read them it took me a while to discover what I was supposed to be doing

It's good to see a program with a lot of thought behind it and this should keep wargamers happy

T.B

instructions	70%
playability	75%
graphics	70%
value for money	75%

★ ★ ★ ★

Valhalla
£14.95

Legend, 1 Milton Rd, Cambridge CB4 1UY

Other adventures advertise "with graphics" — this is graphics "with adventure" Castles, huts, plains, forests and mountains, in high resolution, form beautiful backdrops against which sprite representations of you and the "cast of thousands" enter move, eat drink, fight and die

I'm uncertain the location with the cricket sight screen is in period but perhaps I'm mistaken watching is fascinating but six quests await

Instructions manual is explicitly simple, without revealing all and helpfully condenses all vocabulary and other necessities into a two page 'crib'

Some objects are invisible but What lists and points to all available items Where describes locations and present exits who names the characters List has the usual effect and Help might

There are goodies and baddies, of varying strength and intelligence You must persuade the more stupid to give you food drink and useful items or fight battles for you

Pawn your Microdrive for this and start saving for their next

D.C.

instructions	95%
playability	95%
graphics	95%
value for money	75%

★ ★ ★ ★ ★

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[illegible] The **ULTIMATE PLAY THE GAME** [illegible]

LUNAR JETMAN – 48K ZX Spectrum

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ULTIMATE
PLAY THE GAME

COOKIE – 16/48K ZX Spectrum

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falling fruit! Watch out for your glassware

[illegible]

Save the glasses from the fruits that are falling or some of your best crystal will be smashed

This program runs in TI BASIC with no expansion needed. The object is to catch all the fruit that is descending onto your glasses

Variables

H$ holds the name of the player with high score
SC score
CV bats left
X horizontal position of bat
A horizontal position of fruit
M$ holds the message for PRINT AT routine

How it works

100-150 REMs
160-230 clear screen, set colours
240-310 define characters
320-400 sets variables
420-550 set up red bands on screen
610-680 set variable M$ to the screen messages
690-830 movement of fruit and bat
840-890 lose a life routine
900-1060 win points and change fruits
1070-1100 set M$ to "Game over"
1110-1120 time delay
1130 clear screen
1140 check to see if hi-score is beaten
1180-1220 print congratulations message, asks for player's name
1290-1320 PRINT AT routine
1330-1520 display instructions
1530-1540 wait until a key is pressed
1570-1680 ask for level of play

The game starts by asking you for the level (1 3), then the screen is set up with seven glasses on the bottom band

You must start to catch the fruits These include cherries, ice cubes and olives

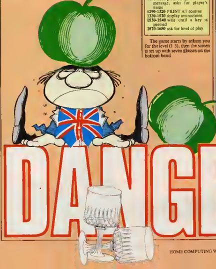
The fruit that will drop first will be the cherry, then at 140 points the ice cubes will fall and at 900 points the olives

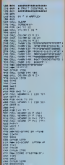
You have four lives to waste at the start of the game So good luck

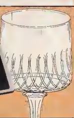
Hints on conversion

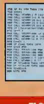
TI BASIC is fairly standard with two main exceptions Single statement lines are used and subroutines for graphics and sound are available, prefixed with CALL, as detailed below

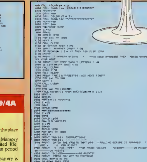
CALL CLEAR clears screen
CALL SCREEN defines screen colour
CALL CHAR defines a character with a 16-digit hex string from an eight by eight grid Other machines will use a different method
CALL COLOUR (character set, foreground background) sets colour of character
CALL HCHAR (row, column, character code, number of repeats) places character on screen at co-ordinates specified and optionally repeats character horizontally
CALL VCHAR similar to HCHAR but repeats character vertically
CALL GCHAR (row column, variable) similar to a screen PEEK on other machines Gives the ASCII code at the given screen co-ordinates
CALL SOUND (D F V) gives sound of duration D, frequency F and volume V Three sounds can be produced at











Micro Tip TI-99/4A

Date your battery

The modules for the TI-99/4A contain in coded form the place and date of manufacture

This is not an idle piece of information the Mini Memory Module contains a battery, and that has a limited life. Although the battery is said to last for two years, that period does not start from the date you buy the module

The life of any battery starts with the date the battery is manufactured, as some small current passes through the internal resistance of the battery When a battery is soldered into the mini memory module, it is immediately 'on load' and running down

The date is coded in the form week number/year, and either prefixed or suffixed with a three letter code indicating the place of manufacture

In an early edition of (the now defunct) 'Tidings', Robin Frowd of Texas Instruments indicated that ATA was Almelo (Holland) Sorry, it isn't!

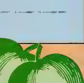
ATA appears to be AUSTIN, Texas LTA is LUBBOCK, Texas

HOLLAND is ACH, while ITALY is RCI

Modules from other parties are no so encoded I have modules from Milton Bradley (same style as TI's), Funware (similar to TI's but lacking the sliding protection plate at the back) and Romox (quite different in style no PCB protection either, but the tracks are gold plated!)

Audiogenic have taken over the distribution of Funware modules in the UK Watch out for them if not cheap, they are good value for money

Stephen Shaw



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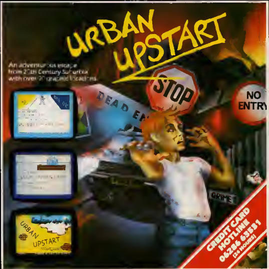
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New life for your favourites

Familiar games given fresh treatments. This is what our review panel thinks of the new versions

Qlman
TI-99/4A £4.50

Byteware, Unit 25, Hanyside, Newcastle upon Tyne NE1 4PZ

There are two games on this cassette, both versions of the popular electronic game in which the player has to repeat the sounds and lights made by the computer

In game one, the computer flashes a light and plays a note and you must press the corresponding key If correct the computer will add an extra note to the sequence, and once again you must press the correct keys An extra note is added until you either press the wrong key or the computer finishes the sequence At this point the program stops, apparently due to a bug — a bad line number

Game two is the same, except that you add a note of your choice after completing the sequence

At the beginning of each game you may choose whether you would like 10, 20, 30 or 40 notes in the sequence

Unfortunately, the instructions are not very clear at first, as the author rather carelessly failed to include punctuation

Overall I found this game was reasonably enjoyable to play as well as being a pleasant change from Space Invaders

J.J.

instructions	50%
playability	65%
graphics	25%
value for money	60%

★ ★ ★

Sam Spade
Spectrum
£5.95

Silversoft, London House, 271/273 King St, London W6

Space Panic was a coin-op game which used to gobble up my loose change Now I don't have to put another penny into the machine

Sam Spade is a cute little fellow who, for reasons beyond his control or my understanding, is trapped in a square cavern with maniac monsters for company

Understandably, Sam is a little annoyed at being outnumbered and so rushes up and down ladders and along walkways frantically digging traps A sharp tap on the head with his spade sends them to their doom Unfortunately, if a nasty is left too long in a trap it frees itself and mutates into more hostile form

All these are the ingredients of an addictive game, and Sam Spede is as compulsive as its arcade counterpart The relatively small size of the TV screen simply adds to the atmosphere, as do the well programmed sound effects The monsters are not particularly intelligent, but if they were the game would be unplayable

I was hooked The only criticism is of the annoyingly long, if rather flash ending to each game I simply could not wait to play again

T.B

instructions	65%
playability	100%
graphics	80%
value for money	85%

★ ★ ★ ★

Zarm
32K BBC £7.95

Program Power 8/8a Regent St, Chapel Allerton, Leeds LS7 4PE

A version of the arcade game involving rescuing stranded men from a planet It is very fast moving and colourful with several options and levels and good graphics throughout Layout of the keys is straightforward although this didn't stop me getting them confused regularly in my panic to do something before I got killed

My one major criticism is that even the start level is a little too difficult for an old stager like me (over 21 I mean) It's not that I can't do it, it's simply that I can't do it fast enough But that applies to many fields nowadays!

Scoring is quite complicated because you score not only for the rescue but also for speed and fuel used However, you won't have time to worry about that, will you?

One novel feature, missing from the other versions I have seen, is the "invisible" key During a flight back to the mothership you can opt to become invisible and therefore avoid the devenees (alien ships) the planet pits against you Unfortunately it uses a great deal of fuel and has to be used sparingly A worthy implementation of an exciting game

D.C.

instructions	70%
playability	80%
graphics	95%
value for money	80%

★ ★ ★ ★

Nemesis
32K BBC £7.95

Program Power 8/8a Regent St, Chapel Allerton, Leeds LS7 4PE

A souped up version of the old arcade favourite Centipede But rather than blasting a centipede you are in combat with convoys of Earth's deadliest adversaries The Vogons Successive waves of the creatures, strung together in their convoys, hurtle towards you and must be destroyed using the fire power of your shuttle craft

The Vogon convoys snake their way down from the top, changing direction if they encounter an asteroid and splitting in two if you zap them in the middle If that's not enough, additional hazards — Chargers, Crushers and Crawlers — appear as the game progesses

Choice of keys to control the shuttle is adequate but I would have preferred the left square bracket to the colon key to control upward movement Joystick option is available and sound on/off is useful

Although the Teddy Bears' Picnic ditty is amusing initially, it does seem inappropriate and tends to wear thin Another minor criticism is the lack of a hall of fame

As a variation on an old theme this program stands up well and is certainly fun to play

D.B

instructions	80%
playability	80%
graphics	90%
value for money	80%

★ ★ ★ ★

Space Shuttle
Simulatar
32K BBC £8.95

Microdeal, 41 Truro Rd, St Austell, Cornwall PL25 5JE

As the title suggests, a flight simulator — but for a complete space flight, from launch to landing with an inflight satellite recovery mission Each phase is scored and should you fail to attain a good window then the program will auto pilot you onto the next stage

The flight manual gives the necessary data and is logically laid out The displays for the various stages are in hi-res black and white and well planned The instruments are also well positioned and easy to read The controls are either joysticks or keyboard I found using the keys that the controls were quite responsive and flight control was good

Unlike most flight simulators this multi mission format added to the enjoyment and I spent many hours crashing into the ground

The only minor niggle is, like the other Microdeal software I've seen, is that it came in a smart looking box with a polystyrene inner but no library case This I find annoying as eventually the box will become tatty A fun filled game

J.H.

instructions	85%
playability	85%
graphics	85%
value for money	85%

★ ★ ★ ★ ★

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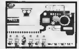

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Music as you RUN... how to make SID play by itself

There's a useful chip inside the Commodore 64 called SID which will play music or create sound effects while your program gets on with what it's doing. David Gristwood explains how to use it in your programs

Thanks to a chip known as SID, the Commodore 64 has powerful and well-known sound effects

Many magazine listings — including those in HCW — have helped programmers make use of this chip and the wide range of sounds it is capable of producing

However, very little has been said on how you might incorporate these into a program, along with graphics and the usual collection of cosmic bug-eyed invaders

Ideally, it would be nice to start the chip off playing a tune, or a series of sound effects, and leave it to carry on by itself, leaving the program free to deal with other tasks which are not time-dependent

It sounds too good to be true, but it is if the music is interrupt driven, which means that every one-sixtieth of a second the interrupt, as well as the updating clock, flashing the cursor and so on, plays a bit of music

My program does all the work for you — simply tell it which notes to play, and it does

The diagram gives a look at the parts of the SID memory map that the program uses Of the three voices available, we will use just one, which has seven associated registers

When using the program, only registers five and six need to be set, defining the envelope of the voice If, however, the waveform is going to be pulse, registers two and three must be set also

The volume must also be set, normally to its maximum, by POKE 54296, 15

Scroff's Music IRQ also has some registers which must also be set before it is activated

Although these must be initialised, they may also be changed during the program, though care should be taken with registers 251 and 252

The start pointers point to the address in memory −1 where the notes are stored

These notes are in the form of high/low byte pairs to indicate the frequencies of each note The user manual, appendix M, gives a list of these pairs and their corresponding musical notes

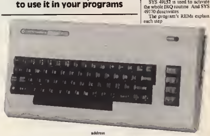
The machine code routine will continue through these pairs until it finds a note with a value of 255 for the high byte

This is taken as a signal to carry on playing the notes that are pointed to by the repeat pointer This means it can move to a new piece, or replay the current piece, depending on the value of the repeat pointer

Typing in and running the program will result in a short tune (!) being played repeatedly Adjusting the speed, waveform, envelope and so on will give an indication of how useful this program can be, and how little effort is needed to produce sound effects

SYS 49152 is used to activate the whole IRQ routine And SYS 49170 deactivates

The program's REMs explain each step



address		description		register number
54272	low byte	frequency control of oscillator 1		0
54273	high byte			1
54274	low byte	pulse width (duty cycle) of pulse wavelength (range 0 to 4096)		2
54275	• high byte			3
54276	waveform control register			4
54277	attack nibble (0-15)		decay nibble (0-15)	5
54278	sustain nibble (0-15)		release nibble (0-15)	6

SID control registers A nibble is four bits (half a byte) — see Programmer's Reference Guide for full details

address		description
49216		speed of music played 1 = fastest, 2 = slowest
49217		countdown to next note played
49218		continue playing or halt 0 = continue, 1 = halt
49219		waveform control 129 = white noise 65 = pulse 33 – sawtooth, 17 = triangle
251	low byte	pointer to start of music/current position updated continually (points to byte before note)
252	high byte	
253	low byte	pointer to repeat — upon repeat start pointer changed to this location
254	high byte	

Scroff's Music IRQ registers

```
10 REM ************************
15 REM *  SCROFF 5 MUSIC IRQ  *
20 REM *  BY DAVID GRISTWOOD  *
25 REM ************************
30 REM
40 REM LOAD MACHINE CODE
50 FOR T=49152 TO 49184 READ A POKE T A NEXT T
58 FOR T=49232 TO 49328 READ A POKE T A NEXT T
62 REM LOAD MUSIC
63 FOR T=828 TO 898 READ A POKE T A NEXTT
90 REM
100 REM SET UP SID CHIP
120 SID=54272
125 POKE SID+2 200 REM PULSE FREQ
130 POKE SID+5 12  REM A/D
140 POKE SID+6 15  REM S/R
145 POKE SID+24 15 REM VOL
150 REM
160 REM INITIALISE FOR M/C IRQ
170 POKE 49216 20 REM SPEED OF MUSIC
200 POKE 49218 0  REM 0=MUSIC ON  1=OFF
240 POKE 49219 33 REM WAVE-SAWTOOTH
250 POKE 251 59 POKE 252 3 REM POINTER START (LO HI)
280 POKE 253 59 POKE 254 3 REM POINTER REPEAT (LO HI)
300 REM
310 REM  SWITCH IRQ ONTO MUSIC
340          SYS 49152
350 REM  IRQ OFF - SYS 49170
360 REM ONCE  SYS 49152  IS CALLED  THE
370 REM ROUTINE WILL START TO PLAY THE
380 REM FREQUENCIES  FOUND AT  (POINTER
390 REM START+1)  -  THESE  MUST  BE IN
400 REM HI LO COMBINATIONS  IF THE HIGH
410 REM VALUE IS  255  THEN THE ROUTINE
420 REM STARTS PLAYING MUSIC AGAIN. BUT
430 REM AT  POINTER REPEAT+1) IF THE TWO
440 REM POINTERS ARE THE SAME  A  LOOP
444 REM WILL BE PLAYED REPEATEDLY
450 REM ANY  OF THE LOCATIONS  THAT WERE
460 REM INITIALISED  MAY BE  ALTERED AT
465 REM ANY TIME  TO CHANGE THE  SPEED
470 REM WAVEFORM  ETC
475 REM ONLY  S I D  VOICE ONE IS USED
480 REM
490 REM DATA FOR M/C
500 DATA 234 234 234 120,169 80 141 20
520 DATA 3 169 192 141 21 3 88 234
540 DATA 234 96 120 169 49 141 20 3
560 DATA 169 234 141 21 3 88 234 96 234
600 DATA 234 234 234 173 66 192 240 4
620 DATA 76 49 234 234 206 65 192 208
640 DATA 247 234 234,234 173 64 192 141
660 DATA 65 192 234 230 251 208 2 230
```

```
680 DATA 252 234 160 0 177,251 141 255
700 DATA 240 48,234 234 234,234 160 0
720 DATA 141 1 212 230 251 208 2 230
740 DATA 252 234 177 251 141 0 212 173
760 DATA 67 192 72 169 0 141 4 212
780 DATA 104 141 4 212 234 234 76,49
800 DATA234 234 234,234 165 253,133 251
820 DATA 165,254,133,252 76,190,192,0
840 DATA 234
860 REM
880 REM DATA FOR MUSIC (HI LO)
900 DATA 57 172 0 0 57 172 0 0 51 97 57 172 64 188,0 0
920 DATA 51 97 57 172 64 188 0 0-57 172 51-97-57,172,0 0
940 DATA 51 97 45,198 45 198 0 0 43,52,0 0 38 126 43 52 0 0
960 DATA 38,126 0 0 38 126,38 126 0,0 43 52 34 75,38 126 0,0,0,0,255
```

Micro Tip **Oric**

Expand your screen

I have discovered that the system variables at addresses 621 and 622 store the start of the Oric's printable display file Initially it contains 48000

Also, address 623 stores the number of lines that are displayable Initially it is 27 (in TEXT mode).

This can be used to increase the size of the screen to include the top line (normally used for messages) by entering

```
POKE 621,47960
POKE 623,28
CLS
```

The screen can also be partially protected from scrolling by reducing the number in 623

H. S. Lim

It was the best then . .

Chess players with a 48K Spectrum will find this program ideal if they are stuck for a partner.

I have seen other chess games for computers, but as far as I am concerned, this is the best so far, and should give hours of enjoyment to the chess buff **B.B.**

instructions	95%
playability	100%
graphics	75%
value for money	100%

★ ★ ★ ★ ★

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U.S. SCENE

Boffins get to work on True BASIC

Here's one from the Reinvented Wheel Dept The two men who invented BASIC, Thomas Kurtz and John Kennedy, are back at it for a revision Forming a company called True BASIC, the professors are in the process of, in their opinion, establishing a "new standard in the industry"

True BASIC will require a micro to have at least 128K of RAM, and is targeted at the educational market True BASIC is expected to use advanced control structures, compiled procedures, a built-in editor, and faster graphics

According to the company president, Russ Walker, True BASIC will have all the advantages of Pascal but be easier to learn and have better graphics capabilities than Logo I wonder how well it will be accepted when it has to go head to head against the de facto standard BASIC marketed by Microsoft

Lotsa luck fellas...

* * *

I have just run across a very interesting application program for the Commodore 64 now being developed Called MusiCalc I, it should be available by the end of next month

The author of the program, Bill Moulton, of Waveform Corporation, in Berkeley, California, feels interested in reversing the process of learning music Traditionally, one must learn skills and practice a lot before one can have fun with music By taking advantage of the music-generating ability of the 64, it is possible to have fun first and acquire skills later.

The program turns the 64 into a three-voice synthesizer It allows the computer (which can be hooked up to a stereo system, external music amplifier, or mixing system) to imitate various musical sounds such as those produced by a flute, accordian, drums, hammer dulcimer, organ, or other less traditional instruments

Along with these basic music production abilities, the program will be marketed with several demonstration discs of various types of music that can be created The program will also allow the computer to be used as a sequencer for you electronic music savants

It also includes the capability of play background music while you play foreground (lead) Special effects such as echo, delay, reverb, equalization, and phase shift are also available Of course, it will be possible to save the music created with this program on disc Each disc can hold up to about 30 minutes' worth Each key on the keyboard can also be reprogrammed to produce a series of notes for added versatility and speed A tuning program allows you to tune MusiCalc to other instruments so others may play along

If all this motivates you to learn more about music, a special screen display can be selected which shows which notes are being played Future products are expected to include a program that will allow written music to be printed out The company is gambling that such a creative product can be as appealing to the consumer as products that are more productive in nature

Perhaps products such as this one will narrow the perceived division between computer science and the arts I hope they succeed The success of the 64 has certainly made a believer out of me If the quality and variety of application programs continues to improve I may end up buying one myself

* * *

If you have recently purchased a Commodore 64 and have started to wonder what to do with it, this product may help It is called I am a C-64, and is designed for those folks who would rather learn how to do something by using their hands rather than by just reading a manual

The product actually consists of two programs Volumes 1-3 are found on one disc, volumes 4-6 on another The first three programs cover an introduction to the machine, sprite graphics, sounds, keyboard, and BASIC The topics on the second disc cover advanced BASIC techniques, sprite graphics, music and sound effects

Documentation for these programs is almost non-existent, but that was the point in the first place Each program is essentially self-documenting Error handling is excellent, the program could not be made to bomb Both the introductory volumes and the advanced ones are easy to use and do the job well They are certainly well worth the $29 95 per disc list price The programs are published by Creative Software, 320 East Carribean Drive, Sunnyvale, California 94089 Phone (408) 745-1655.

* * *

I think the most aggravating system failures are those caused by static electricity As a writer, I know of little that is more infuriating than to be writing away when a co-worker shuffles up to my word processor and touches something critical only to have a blast of the old static wipe out the last few minutes work I am sure that most of you have been plagued with similar problems

Well, a firm called ACL Incorporated can help If you write nicely it will send you a free eight page colour booklet which contains quite a few tips on controlling static and static proofing The firm markets a line of static control products, so its interest is not solely humanitarian, yet it is still worthwhile Write to ACL Incorporated, 1960 East Devon Avenue, Elk Grove Village, Illinois 60007. (312) 981-9212

* * *

It isn't exactly a home computer, but I thought you might be interested I don't know how many of you are interested in the IBM PC and all its various clones, but you might be briefly interested in the latest computer claiming to be PC compatible It is called nothing less than the Great Wall 100 and comes from (you guessed) the People's Republic of China

Without boring you with too many details, the computer comes with 256K of RAM, 40K of ROM, two 320K 5¼in floppies, and a green screen monitor, not to mention a parallel printer output All for the mere sum of 30,000 yuan (about $15,000). Hardly what you could call competitive On the other hand, the IBM machine cannot support CCDOS, which contains, among other things the ability to read over 7,000 Chinese characters into memory in just under 20 seconds How about that!

* * *

Here's a few of the results of a recent Harris poll Forty-five per cent of those polled indicated that they know how to use a personal computer One in 10 own a computer An additional 39 per cent expect to by one in the coming five years Of those who know how to use a computer, 62 per cent are under 30 and 10 per cent are over 65 About 70 per cent of the computer literates have a four year college degree while only about 16 per cent have not completed high school About 67 per cent of those whose incomes exceeded $35,000 per year can operate a computer, while only 23 per cent of those having incomes less than $7,500 can claim that ability This serves to underline the difference between the haves and have-nots, as I have touched upon in previous columns Furthermore, about 77 per cent of those surveyed are worried about privacy invasion by computer This statistic is up from 64 per cent when the same question was asked five years ago Most of those polled thought the three main offenders in this regard were credit bureaux, loan companies, and insurance firms I'm not surprised to learn about this increase After all, this is 1984

See you next week
Bud Izen
Fairfield, California

Steer, shoot and sleigh

Although the TI-99/4A has ceased production, games are still being released

A B M Control Ex BASIC, Joystick £6.95

Fantasia 99, from Christine Computing, 6 Florence Close, Watford, Herts

A B M, or Anti-Ballistic Missile Control, sets one or two players the formidable task of defending four cities and three missiles bases from destruction by bombs, bombers and cruise missiles, all in various formations

By centring a sight on the target and pressing the fire button an A B M is launched from the player's nearest operational base The game continues for as long as one city remains, the computer's attacks coming in successive waves

At the end of each successful defence a score is given calculated on bonuses obtained during that round multiplied by the number of screens survived After this score has been added to the total the display changes colour combinations and the game continues at a more advanced level

Although this is a very good game I was staggered at the price In the same batch for review came this same program by Fantasia from a different distributors which was offering it with another game for less!

J.W.

instructions	n/a
playability	80%
graphics	80%
value for money	50%

★ ★ ★

System Trader Typing Test £4.55

Solway, 6 Curzon St, Maryport Cumbria CA15 6LL

System Trader comes complete with a Flight Manual and Trading Regulations It's all about buying and selling commodities through the Solar System to make a fat profit before returning to headquarters

There's more to it than wheeling and dealing, however as you must also take command of your spaceship, the Dragon slayer

On landing or take off the screen displays instrument readings for fuel, altitude, velocity and thrust Using the numeric keys, and spacebar in emergencies, thrust is controlled to achieve launch and hopefully safe landings Correct handling of the thrust takes some getting used to — most of my descents sent me to hospital!

When you've finally worked your way round the planets you're given a comment, varying from unsuitable managerial material to Trader of the Year!

Typing Test is an entertaining program to speed up your skill at locating letters on the keyboard You may choose a delay factor from 0-500 After a test of 10 letters you are given a score and told the lowest highest and average delays in response **J W**

instructions	100%
playability	70%
graphics	50%
value for money	100%

★ ★ ★ ★ ★

Builder/ Minefield £4.95

Lantern, 4 Haffenden Rd, Tenterden TN30 6QD

Two simple yet entertaining games which are loaded together then selected from menu Versions are provided for both keyboard and joystick

The object of Builder is to pick up bricks and lay them on a concrete strip As you steer your truck round the site, puddles must be avoided as should the oily trail left behind You may have either a static or moving truck where moving means continually travelling in the direction last input

In the keyboard version however, the truck can be stopped by any key other than those controlling direction — an oversight which allows cheating! The game ends either when all bricks have been successfully laid or if you cause so much damage that you are sacked

In Minefield you steer a tank from the left to right avoiding mines in your path, the number of which is increased with each traverse If this wasn't enough, a howitzer periodically fires blocking your way even more When the tank crashes three times the game ends, showing yards of territory gained When this becomes too easy you can get opt for invisible mines and then you're in trouble! **J W**

instructions	70%
playability	75%
graphics	70%
value for money	90%

★ ★ ★ ★ ★

Astrowars £5

Stainless, 10 Alstone Rd, Stockport, Chs SK4 5AH

A game which will be familiar to everyone as there is a version for just about every computer and game console

You control a spaceship in the centre of the screen and you spin the ship, using the S and D keys, to fire at asteroids and alien spacecraft coming at you from all angles

This cassette, however, is written in BASIC — it has to be for the standard TI — and although it has all the ingredients of the game it is let down badly by the speed of the language

Instructions on screen and the controls are easy to operate making the game suitable for the younger enthusiast

Graphics and colour are used well As already mentioned, however, the speed of the action is too slow for this sort of game and I feel therefore that the price quoted is a little high **D B**

instructions	70%
playability	60%
graphics	70%
value for money	50%

★ ★ ★

Bob Sleigh/ Bio-rhythms £4.50

Byteware, Unit 25 Handyside Arcade, Newcastle-upon Tyne NE1 4PZ

The object of Bob Sleigh is to steer along the track for as far as you can without crashing

There are four courses, ranging from "very easy, flat" to "impossible, no kids" — little does the author know that "kids" are usually best at these

When the game is played, you discover that the different skill levels only alter the width of the track, but there are four speeds at which the course may be attempted

The sounds and graphics were just about acceptable, but not really anything special — indeed I was amazed to find that one graphics character was taken straight out of the TI manual!

Bio-rhythms are cycles that start on the day you are born There are three types physical, every 23 days psyche, every 27 days, and intellectual, every 33 days

This program is designed to plot three graphs, as well as an average for the next 30 days giving an idea of how you will feel and shape up during this time

Even though Bob Sleigh became rather boring after a while, I thought Bio-rhythms made up for this Good value for money Ratings are averaged between the two **J.J**

instructions	80%
playability	70%
graphics	65%
value for money	80%

★ ★ ★ ★

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This program makes good use of the computer as a teaching aid. Multiplication Tables (the very basis of all school maths) can be learnt much more quickly and pleasantly than by conventional methods

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EVANS SYSTEMS,

Kilstay Bay, Drummore, Stranraer DG9 9QT

Send your letter to Letters, Home Computing Weekly, No.1 Golden Square, London W1R 3AB. Don't forget to name your computer — the best letter could win £5-worth of software. Got a problem with your micro? We'll soon be starting a queries page, so send your technical questions to Queries at the above address

Commodore: a neat trick

The Commodore manuals tell you how to abbreviate BASIC keywords so you only need to press two keys for any single command

What they do not tell you is that if you abbreviate the commands you can get more than the standard number of characters per line — a technique used by HCW authors, including David Rees in his Extended BASIC for the Commodore 64

So if you have a line which is too long to fit you can squeeze it in by turning all the keywords to tokens

NEXT becomes N (shifted) E for example This technique will work on all Commodore computers, from BASIC 2 0 PETs to the 700 series including VICs and 64s

If you are tight on memory it is particularly useful as each line number alone occupies two bytes

Remember, though that the extra bits squeezed in cannot be edited and if you hit RETURN over the extra line separately you may get an error

Simon Rockman, London W1

Spectrum 'name' change

On purchasing Home Computing Weekly No 44 I was delighted to find a "names and addresses book" program for the Spectrum

However after typing it into my machine and storing a few names to test the system, I discovered that the program would not re search after listing the first name It just came up with "search complete"

After closer examination of the program I realised that by pressing "n" to continue the search Z$ was being given another value which was then substituted for its original value in the search loop lines 2160 to 2190

Interested readers may care to note that by altering line 3100 to GOSUB 900 and making these changes

```
3110 IF O$="c" THEN
    COPY
3120 IF O$="n" THEN
    GOTO 2190
3130 IF O$<>"a" THEN
    GOTO 3100
```

and inserting a line 800 LET O$=INKEY$ RETURN then that part of the program will work

However the same thing happens again when an amendment has to be made so alter the following lines

```
3150 GOSUB 900
3160 IF p$<"1" OR p$>
    "7" THEN GOTO 3150
3180 PRINT p$
3190 LET I=15*VAL p$-
    14
```

and insert line 900

```
900 LET p$=INKEY$
    RETURN
```

The otherwise very well written program will now work

A G Bird, Ripley, Derby

1
ER
POST OFFICE

End the squobbles

Why don't you put an end to the squabbles over your software reviews?

Don't print the letters of complaint — after all, it's only one person's view of a program Also, why waste space printing the "my high score is" letters? The page is for queries and information isn't it?

By the way, to enter the lowest dungeon in Halls of the Things without getting the rings may be done by pressing 2 followed by the space bar It's my favourite game as well

J Harris, Fishponds, Bristol

★ *Software winner*

In true democratic tradition we're throwing the debate open to you our readers Let's have your letters saying what you think

Sove your Oric keys

Many thanks for a super mag — it's the only one I buy now, as you keep reviewing Oric-1 software and printing listings We've typed them all in now, the latest one being Can You Catch the Secrets by G Bailey (HCW 39)

This program is very good using user-defined graphics But one annoying thing we found is that to move your "man", you have to "rattle" the keys To overcome this problem (and save the keyboard) I used this routine which replaces the lines involved

```
110 P=PEEK(520)
115 IF P=172 THEN X=
    X-1 IF X<8 THEN
    X=7
120 IF P=188 THEN X=
    X+1 IF X>31 THEN
    X=32
```

If you now type in those lines and run the program you get a "man" that moves effortlessly across the screen

Keep up the good work

Corporal P. Lyall, RAF Wildenrath, BFPO 42

Cavern code numbers

In his letter about Manic Miner (HCW 45), G Holding mentioned that you have to enter the code 603 1769 But he didn't give the codes (20 of them) for the different caverns, so here they are

1 Central Cavern 6
2 The Cold Room 61
3 The Menagerie 62
4 Abandoned Uranium Works 621
5 Eugene's Lair 63
6 Processing Plant 631
7 The Vat 632
8 Miner Willy Meets Kong 6321
9 Wacky Amoebatrons 64
10 The Endorian Forest 641
11 Attack of the Mutant Telephones 642
12 Return of the Kong Beast 6421
13 Ore Refinery 643
14 Skylab Loading Bay 6431
15 The Bank 6432
16 The 16th Cavern 64321
17 The Warehouse 65
18 Amoebatrons' Revenge 651
19 Solar Power Generator 652
20 The Final Barrier 6521

I hope these will help other Spectrum users try other screens instead of trying to get to a different screen from the first cavern

Stephen Holland, Market Drayton Shropshire

Circle suggestion

I was interested to read Geoff Turner's article on circle-drawing on the BBC micro

May I suggest that both he and some of your readers should look at something called a Grafpad which comes from a company called Central Trade Exchange in Dunstable (0582 64334)

With it I can draw circles triangles rectangles and do free hand drawing, and lots of other things

Gerald Roll, Harlow, Essex

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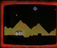
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Multi-Coloured Sprite Graphics 48K £6

B Sides, 4 Willesden Rd, Cefn-Glas, Bridgend, S Wales

If sprite graphics mean nothing to you then look at Ultimate's games Its great graphics are the result of using sprites and with this package you can and sprites of equal standard to your BASIC and machine code programs

The package contains three programs first, three demonstration routines showing just how attractive and effective well manipulated sprites can be The second allows you to define your own sprites (up to full screen size with each character given it's own attributes) and save them to tape Section three explains how to use your creations including a ready-made collision checking routine essential for games

Perhaps the most interesting and useful are the machine code routines enabling use of sprites

For the initiated, this package will no doubt be well received and well used However, not much thought is given to the novice A small manual accompanying the game would have been helpful My only other criticism is that the instructions on use were on screen and I had to laboriously copy them for reference while the computer was in use

T B

instructions	50%
ease of use	70%
display	90%
value for money	90%

★ ★ ★ ★ ★

Master Tool Kit £9.95

Oxford Computer Publishing 4a High St, Chalfont St Peter, Bucks SL9 9QB

Most toolkits provide Renumber, Merge Delete, Move or Copy Lines, Rem Kill Search/Find and Substitute Strings Variable Listing Trace Change of Case and Memory Free Mine does all this in 357 bytes, so what extra does OCP offer that takes up 7½K?

The clock/alarm and graphic memory map can be erased, giving back 600 bytes LIST, CLS and Syntax Check and already available in BASIC, although Syntax here adjusts hidden binary forms and may decide to replace your repeated constants with variables, possibly a mixed blessing

Change RAMTOP without Variable loss and Error Trap are useful although I'm undecided about the Function Keys

The Star features — Pack and Compress — claiming savings of up to 20 per cent of program length, with flow preserved — are a Catch 22 Toolkit in and hogging the last 7½K, you can't get near memory end when they would be useful And, being only useable on fully debugged, working programs, and unalterable afterwards, any space saved cannot be used

D C

instructions	90%
ease of use	45%
display	n/a
value for money	45%

★ ★

Data Genie £9.95

Audiogenic, PO Box 88, Reading, Berks

This file system comes in very glossy packaging, the 16-page instructions are well-written and easy to follow and the program is so user friendly as to be positively gushing!

Using keys 5 and 7, you move a coloured cursor line down the main menu pressing 8 when it covers your selection and a mini menu, with further options, is then overprinted Similar selection here may lead to yet more mini menus At times the screen overflows with menus, but a thoughtful CLS option handles this

Normal functions are covered Set Up File, Enter Record, Print Record, Search and Storage Search is particularly powerful and will find any word in any field Up to 15 fields are available per record, length 10-20 characters and an alternative type-face is provided

A very easy package to use but exiting back through each menu to reach the main menu is a little wearying The number of records available range from 146, with fields 10 characters long, to 73 with maximum length, and I question if a file of such limited size has real practical use

D C

instructions	95%
ease of use	85%
display	85%
value for money	50%

★ ★ ★

Typeset £5.60

Micro-Kraft, 48 Seacourt, Clontarf, Dublin 3, Eire

One of the Spectrum's many useful features is the ability to relocate the character set in RAM If you have the time and the patience, plus the know how, you can create your own character set for use in your own programs.

With Typeset all you need is a few minutes and you could load all, or any, of the 12 character sets provided

You will have no trouble loading either side of the tape but first, though you must load side one This is not just because there are demonstrations of the character sets on it, but because the programmer has a delightfully impish sense of humour Included on side one are instructions for using the 50 characters per line character set, along with a demonstration screen

Side two holds the 12 character sets and the instructions are easy to follow The inlay card gives full instructions, and explanations so you can't go wrong Although I cannot vouch for their authenticity Greek and Hebrew are included

A very useful well presented utility I can certainly find a use for it, and I look forward to seeing anything from this stable

B B

instructions	100%
ease of use	100%
display	100%
value for money	100%

★ ★ ★ ★ ★

Blackjack £6

Chipmunk, 52A The Vale, London NW11

Is there anything the Spectrum cannot do? Now according to this program, it can be used to win money in the casinoes

The computer plays a fair game and good fun it is too But the most interesting part are the playing tips in the superb manual, written by an expert who explains the British and American casino rules, pointing out the strengths and weaknesses of each

Above all, it outlines seven strategies Six fail to beat the house, but one — the card count strategy — amazingly shows an overall profit of just over one hundredth Finding this claim difficult to swallow I used the strategy against the computer and, sure enough, I came out with a tiny overall win

However, I haven't yet put the program to the test in a casino — I'll wait for somebody else to do that There is a clause at the end of the manual warning that use of the technique in casinos is at your own risk

Nevertheless, I unreservedly recommend this marvellous program which anybody can use In fact I recommend all casino addicts buy a Spectrum just for this program — the computer should soon pay for itself

T.B

instructions	90%
playability	90%
graphics	n/a
value for money	100%

★ ★ ★ ★ ★

Don't leave them standing

This version of the popular Bomber game, written by Ian Goldsack, will fit into the unexpanded VIC-20

You must kill or be killed! Unless every building in the city is destroyed you will die, and so will your country

In one of the buildings below you are a spy with information which will cripple your country's defenses and leave you vulnerable to attack

How it works
- 100-210 instructions
- 300-309 define graphic characters
- 400-440 data for graphic characters
- 500-540 initialise variables
- 600-640 wait until ready to continue
- 700-920 set up screen
- 1000-1070 move plane, check for hit building
- 1080-1155 move bomb, check for hit building
- 1160-1199 has plane landed? pause back to start of movement routine
- 2000-2040 drop bomb
- 3000 3100 plane landed
- 4000-4300 destroy plane Another go?

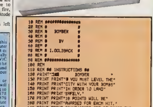
To complicate matters, you have only once chance. You are running low on fuel due to damage from anti-aircraft fire, and losing power and altitude very quickly.

If even one building is left standing you will crash

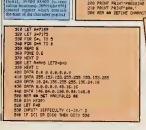
Hints on conversion

If you want to convert this program for another computer (other than a Commodore 64 or PET), it will need almost totally rewriting as it uses various VIC control characters for the movement of the cursor around the screen as well as numerous POKES

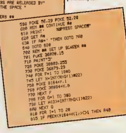
For conversion to a CBM or PET the following POKES will have to be changed according to the machine used 36878 (volume) 36874 36875,36876 (sound channels), 36877 (white noise), 7680-8185 (screen locations), 38400 38905 (screen colour locations) 36869 (the 656) control register which controls the start of the character matrix)



```
10 REM ***************
20 REM *             *
30 REM *   BOMBER    *
40 REM *             *
50 REM *     BY      *
60 REM *             *
70 REM * I.GOLDSACK  *
80 REM *             *
90 REM ***************
100 REM
110 REM ** INSTRUCTIONS **
120 PRINT"J■       BOMBER       "
130 PRINT PRINT"■ YOU MUST LEVEL THE"
140 PRINT PRINT"CITY WITH YOUR BOMBS"
150 PRINT PRINT"IN ORDER TO LAND"
160 PRINT PRINT"SAFELY."
170 PRINT PRINT"10 POINTS WILL BE"
180 PRINT PRINT"AWARDED FOR EACH HIT."
190 PRINT PRINT PRINT'BOMBS ARE RELEASED BY"
200 PRINT PRINT"PRESSING THE SPACE "
210 PRINT PRINT"BAR.'
300 REM ** DEFINE CHARACTERS **
```



```
310 LET A=7168
320 LET B=7175
330 FOR C=1 TO 5
340 FOR D=A TO B
350 READ E
360 POKE D,E
370 NEXT D
380 LET A=A+8 LETB=B+8
390 NEXT C
400 DATA 0,0 0,0,0,0,0,0
410 DATA 255,153,153,255,255 153,153,255
420 DATA 16,24,156,255 255,136,24,16
430 DATA 0,0,0,0,0,40,16,16
440 DATA 146,84,0,198,0,84,146,0
500 REM ** SET VARIABLES **
510 DIM H(30)
520 LET F=0
530 INPUT" DIFFICULTY (1-10)" D
540 IF D<1 OR D>10 THEN GOTO 530
```



```
590 POKE 56,29 POKE 52,28
600 REM ** CONTINUE **
610 PRINT'      ■PRESS SPACE■"
620 GET A$
630 IF A$=' "THEN GOTO 700
640 GOTO 620
700 REM ** SET UP SCREEN **
701 POKE 36878,15
710 PRINT"J"
720 POKE 36869,255
730 POKE 36879,29
740 FOR F=1 TO 10*D
745 LET X=INT(RND(1)*22)
750 POKE 8164+X,1
760 POKE 38884+X,0
770 NEXT F
780 FOR G=1 TO 3*D
790 LET H(G)=INT(RND(1)*22)
800 NEXT G
810 FOR I=1 TO 20
815 IF PEEK(8164+H(I))<>1 THEN 840
```

Main variables
- A,B,C,D,E dummy during initialisation
- A$ keyboard input dummy
- I,ZZ,T dummy for FOR NEXT loops etc
- B bomb position
- P plane position
- F is bomb dropping?
- XX has bomb hit building?
- H(x) building position

In this game for the unexpanded VIC there are 10 levels of difficulty, from one (easy) to 10 (hard) This controls the number of buildings and the speed of the game

Bombs are released by pressing the space bar

Control characters
- 120 clear home, reverse text, blue text
- 130 red text
- 610 red text, reverse text reverse text off
- 3006 clear home
- 3020 SHIFT Y,L S,S,P
- 3050 SHIFT W,Y,L
- 3060 SHIFT A G
- 4120 clear home
- 4140 SHIFT Y,H F A
- 4150 SHIFT D Y
- 4160 SHIFT C,L C
- 4170 cursor up, SHIFT O,S
- 4200 clear home cursor down, SHIFT W Y,L
- 4210 SHIFT A G
- 4270 clear home

Continuous depression of the space bar can lead to corruption of the graphics If this happens there is no need to switch off the computer Just leave the program running until the plane crashes Press Y for another go and the graphics will be restored

The maximum possible score is 640 points, but a score of 500 or over is very uncommon as the chance of the screen containing this number of buildings is extremely low

▶

VIC-20 PROGRAM

```
820 POKE 8142+H(I),1
830 POKE 38652+H(1),0
840 NEXT I
850 FOR I=1 TO 20
855 IF I=20 THEN GOTO 915
860 LET K=INT(RND(1)*22)
870 IF PEEK(8142+K)<>1 THEN NEXT I
880 POKE 8120+K,1
890 POKE 38840+K,0
910 NEXT I
915 LET ZZ=INT(RND(1)*5000)+1
920 FOR T=1 TO ZZ NEXT T
1000 REM ** PLAY **
1010 POKE 7680+P-1,0
1020 POKE 7680+P,2
1030 POKE 38600+P,6
1040 P=P+1
1045 IF PEEK(7680+P)=1 THEN GOTO 4000
1050 GET A$
1060 IF A$=" "THEN GOSUB 2000
1070 IF F=0 THENFORT=1TO60 NEXT GOTO 1160
1080 POKE 7680+B,0
1090 LET B=B+22
1100 IF PEEK(7680+B)=1 THEN XX=1
1110 IF XX=0 THEN POKE 7680+B,3
1120 IF XX=1 THEN POKE 7680+B,4
1125 IF XX=1 THEN POKE 36877,200 POKE 36877,0
1130 POKE 38400+B,2
1135 IF B>506 THEN F=0
1140 IF XX=1 THEN F=0
1150 IF XX=1 THEN POKE 7680+B,0
1155 IF XX=1 THEN SC=SC+10
1160 LET XX=0
1170 IF P=505 THEN GOTO 3000
1990 FOR I=1 TO 150-D*15 NEXT
1999 GOTO 1000
2000 REM ** RELEASE BOMB **
2010 IF F=1 THEN RETURN
2020 LET B=P+21
2030 LET F=1
2040 RETURN
3000 REM ** LANDED **
3005 FOR T=1 TO 5000 NEXT
3006 PRINT"J"
3010 POKE 36869,242
3020 PRINT" YOU LANDED SAFELY    SCORING ",SC" POINTS"
3030 FOR I=1 TO 5000 NEXT
3040 PRINT PRINT
3050 PRINT"COULD  YOU  LIKE"
3060 PRINT"ANOTHER  GO  ?"
3070 GET A$
3080 IF A$="Y"THEN RUN 500
3090 IF A$="N"THEN 4270
3100 GOTO 3070
4000 REM ** HIT BUILDING **
4010 POKE 7680+P-1,0
```

```
4110 POKE 36878,0
4120 PRINT"J"
4130 POKE 36869,242
4140 PRINT PRINT" YOU  HAVE FAILED AND"
4150 PRINT PRINT" DESTROYED  YOUR
4160 PRINT PRINT" COUNTRIES LAST CHANCE"
4170 PRINT PRINT" OF SURVIVAL  !!"
4180 PRINT PRINT
4190 FOR I=1 TO 5000 NEXT I
4200 PRINT"JW  COULD  YOU  LIKE"
4210 PRINT PRINT" ANOTHER GO  ?"
4230 GET A$
4240 IF A$="Y" THEN RUN 500
4250 IF A$="N" THEN GOTO 4270
4260 GOTO 4230
4270 PRINT"J"
4280 POKE 36869,240
4290 POKE 36879,27
4300 END
```

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Accuracy and speed are required for this Shooting Gallery, superb use of colour and graphics in this new and challenging game from the author of Jackpot. 100% machine code, joystick or keyboard control **£5.50**

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They're an evil lot on Orion — both the attackers and the attacked. The older asteroid miners say you haven't a chance. Will you prove them wrong? Type in Marc Freebury's game for the Atari 800 and risk it

The last person to insult an Orion asteroid minder left the space station rather unexpectedly — without a spacesuit

The miners are worse than ever these days, since the treaty with the Kral was broken. The horse-shoe-shaped aliens now attempt to attack the miners as they use magno-grabs to catch the hurtling chunks of Herculaneum ore-bearing asteroids.

How it works

155-290 character set redefinition
300-510 main game. Note the REMS indicating where inverse characters are used
520-610 front page
620-890 there are four end of game routines: 1 successful sheet, 2 too many misses, 3 hit object, 4 alien invades

The latest turn of events is that the asteroid belt has been seeded with impact mines — and the miners know precisely who to blame. In retaliation and self defence they have taken to crushing the aliens with their magno-grabs

You are a rookie miner, having only a few credits to your name. Older miners are billionnaires, but as the miners' motto says

Variables

CHK checksum which must equal 5195, or you have problems
DIFF,DELAY,EFLAG main arguments passed to and from machine code
LIVES,SCORE,BONUS obvious
SCRN indicates top left and bottom left screen corners, to save the machine code doing the maths

"You'll never survive"

The game is written as 90 per cent machine code, and is difficult even at the lower levels

Use your joystick to move your mining ship. Press the button to grab an asteroid or crush an alien, but only when it is directly between the jaws. Closing too early too often will result in game termination, as will crushing or hitting mines

If an alien lands you will be eliminated utterly. Other forms of termination will lead to the loss of one of your three lives

Each time 10 asteroids have been gathered, your score will be shown and a new level entered

The game was designed on a disc based system, and thus may be saved to disc or cassette. 32K is required to run it

```
100 REM ****************
110 REM *              *
120 REM * ORION  MINER! *
130 REM * BY M FREEBURY *
140 REM *              *
150 REM ****************
155 REM CHARACTER SET DATA
160 DATA 7,24,60,90,153,255,231,195,195
,195,32,0,56,96,64,64,96,56,15
170 DATA 40,0,28,6,2,2,6,28,240,48,56,4
1,255,123,174,254,90,36
180 DATA 64,15,28,60,120,112,56,28,15,7
2,240,56,28,14,14,28,56,240
190 DATA 776,129,66,60,96,36,60,66,129
200 A=(PEEK(106)-8)*256:SCRN=PEEK(88)+P
EEK(89)*256
205 REM MACHINE CODE CONSTANTS
210 EFLAG=16838:DIFF=EFLAG+2:CATCH=DIFF
+1:ALIENS=CATCH+1:MISSES=ALIENS+1:DELAY
=MISSES+1
220 RESTORE 230:FOR I=0 TO 31:READ N:PO
KE 1536+I,N:NEXT I
225 REM CHARACTER SET RELOCATER
230 DATA 104,104,133,204,104,133,203,10
4,133,206,104,133,205,162,4,160,0
240 DATA 177,203,145,205,136,208,249,23
0,204,230,206,202,208,240,96
250 X=USR(1536,57344,A)
260 RESTORE 160:READ NUMBER
270 FOR I=1 TO NUMBER:READ ADDR:FOR J=0
 TO 7
280 READ Z:POKE A+ADDR+J,Z:NEXT J:NEXT
I
290 GRAPHICS 18:SETCOLOR 4,0,15:? #6,"
 * LOADING M/C *"
295 REM MAIN GAME MACHINE CODE
300 DATA 104,32,33,64,32,62,64,32,239,6
4,174,204,65,172,200,65,136,208,253,202
,208
310 DATA 247,32,239,64,173,198,65,201,0
,240,228,96,169,0,141,199,65,141,198,65
,141,198,2,141,201,65,141
320 DATA 202,65,141,203,65,169,125,141,
251,2,32,170,246,96,165,88,133,0,165,89
,133,1,160,1
330 DATA 173,10,210,203,200,65,144,27,1
73,10,210,41,15,201,8,176,5,169,97,76,1
05,64,201,15
```

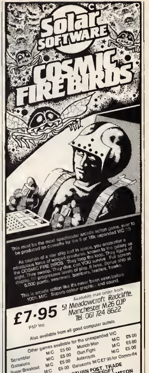
```
340 DATA 176,5,169,6,76,105,64,169,3,14
5,0,200,192,39,208,216,173,0,6,133,0,17
3,1,6
350 DATA 133,1,160,0,177,0,201,97,240,1
1,201,6,240,7,201,3,240,3,76,181,64,72,
169,0
360 DATA 145,0,160,40,177,0,201,128,240
,19,201,4,240,15,201,5,240,11,201,8,240
,7,201,9
370 DATA 240,3,76,178,64,169,3,141,198,
65,104,145,0,198,0,165,0,201,255,208,2,
198,1,165
380 DATA 1,197,89,208,181,165,0,197,88,
208,175,173,2,6,133,0,173,3,6,133,1,160
,40,177
390 DATA 0,201,3,208,8,169,4,141,198,65
,76,233,64,169,0,145,0,200,192,80,208,2
39,96,173
400 DATA 132,2,201,0,240,96,169,0,172,1
99,65,145,0,200,200,145,0,152,24,105,38
,168,169,0
410 DATA 145,0,200,145,0,200,145,0,173,
120,2,201,11,208,19,173,199,65,201,0,24
0,28,206,199
420 DATA 65,76,53,65,201,7,208,19,173,1
99,65,201,35,240,6,238,199,65,76,53,65,
172,199,65
430 DATA 169,4,145,0,200,200,169,5,145,
0,152,24,105,38,168,169,72,145,0,200,16
9,128,145,0
440 DATA 200,169,74,145,0,96,172,199,65
,173,2,6,133,0,173,3,6,133,1,169,8,145,
0,200
450 DATA 200,169,9,145,0,152,24,105,38,
168,169,72,145,0,200,169,128,145,0,169,
74,200,145,0
460 DATA 172,199,65,200,177,0,201,97,20
8,8,169,3,141,198,65,76,193,65,201,6,20
8,18,238,201
470 DATA 65,173,201,65,201,10,208,33,16
9,1,141,198,65,76,193,65,201,3,208,6,23
8,202,65,76
480 DATA 193,65,238,209,65,173,203,65,2
01,100,208,5,169,2,141,198,65,169,0,145
,0,96,0,0
490 DATA 240,0,0,0,0,48,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0
```

ATARI PROGRAM

```
500 RESTORE 300 CHK=0 FOR I=0 TO 479 RE
AD B POKE 16384+I B CHK=CHK+B NEXT I
510 IF CHK<>51952 THEN GRAPHICS 0 ? "M/
C ERROR" STOP
515 REM MACHINE CODE VARIABLES
520 SCRN=SCRN+960 POKE DIFF,254 POKE DE
LAY 200
530 POKE 1536 SCRN-(INT(SCRN/256)*256)
POKE 1537 INT(SCRN/256)
540 SCRN=SCRN-80 POKE 1538,SCRN-(INT(SC
RN/256)*256) POKE 1539,INT(SCRN/256)
545 REM FRONT PAGE
550 GRAPHICS 18 SETCOLOR 2,0,0 SETCOLOR
 4 10 4 POKE 756 A/256
560 POSITION 7,2 ? #6,"ORION" POSITION
7 4 ? #6,"MINER" POSITION 9,6 ? #6,"*"
POSITION 9,7 ? #6,"&" START=0
565 REM PREVIOUS LINE,'&' IS INVERSE
570 POSITION 4,9 ? #6,"PRESS START"
580 SOUND INT(RND(1)*4),RND(1)*255,RND(
1)*15 8 FOR I=0 TO RND(1)*50 POKE 710,R
ND(1)*255
590 IF PEEK(53279)=6 THEN I=51 START=1
600 NEXT I IF  NOT START THEN 580
610 FOR I=0 TO 3 SOUND I,0,0,0 NEXT I
615 REM MAIN GAME LOOP
620 LIVES=3 SCORE=0 FUEL=0 SHEETS=1 POK
E DIFF,254 POKE DELAY,200
```

```
A/256
640 POKE 752,1 POSITION 13,10 ? "PLAY P
LAYER 1" POSITION 16,12 ? "LIVES ",LIVE
S POSITION 16,14 ? "SHEET ",SHEETS
645 REM 'PLAY PLAYER 1' ALL INVERSE
650 FOR I=149 TO 0 STEP -1 POKE 755,(PE
EK(755)=0)*2 SOUND INT(RND(1)*3),1,10,8
 NEXT I
660 FOR I=1 TO 200 NEXT I FOR I=0 TO 3
SOUND I 0,0 0 NEXT I
670 X=USR(16384)
680 ON PEEK(EFLAG) GOTO 690,740,750,820
690 ? CHR$(125) POSITION 14,10 ? " BONU
S x 100" BONUS=SHEETS*10+PEEK(ALIENS)*1
00
700 POSITION 18 12 ? BONUS SCORE=SCORE+
BONUS+100 POSITION 17,14 ? "SCORE" POSI
TION 18 16 ? SCORE
705 REM 'SCORE' INVERSE
710 POKE DIFF PEEK(DIFF)-2 POKE DELAY,P
EEK(DELAY)-5 SHEETS=SHEETS+1
720 FOR I=1 TO 800 NEXT I
730 GOTO 630
740 SCORE=SCORE-100 IF SCORE<0 THEN SCO
RE=0 GOTO 750
750 SETCOLOR 1 0 15
760 FOR I=0 TO 150 STEP 4 POKE 709,15-I
NT(I/10)
```

```
770 FOR J=0 TO 3 SOUND J,I,0,8 NEXT J N
EXT I
780 FOR I=1 TO 100 NEXT I FOR I=0 TO 3
SOUND I,0,0,0 NEXT I
790 ? CHR$(125) POKE 709,10
800 LIVES=LIVES-1 IF LIVES=0 THEN 860
810 GOTO 690
815 REM GAME HAS 4 ENDINGS   ALL HERE
820 GRAPHICS 18 SETCOLOR 2,0,0 SETCOLOR
 1 3 8 POKE 756,A/256
830 POSITION 10,10 ? #6,"&" FOR I=0 TO
9 POSITION 10,I ? #6," " POSITION 10,I+
1 ? #6,"*",
840 FOR J=1 TO 30 NEXT J NEXT I POSITIO
N 0,0 ? #6,"***** BEATEN!! *****"
850 FOR I=1 TO 700 NEXT I GOTO 860
860 GRAPHICS 18 SETCOLOR 2,0,0 ? #6,"
  FINAL SCORE "
870 POSITION INT((20-LEN(STR$(SCORE)))/
2),5 ? #6,SCORE
880 FOR I=1 TO 1000 NEXT I
890 GOTO 550
```



This must be the most spectacular arcade action game, ever to be produced on cassette for the 8 or 16k expanded VIC 20

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Travel faster than light — and learn the keyboard

Here's a space game and a teaching program, both written for the unexpanded ZX81 by Terry Dean

Hyperdrive

Hyperdrive, as all good Space Cadets know, is a method of travelling faster than light to cross vast distances of space in a short time

How it works

20-30 sets up the 'escapes and misses' counters
40 sets up the main loop. The character within quotes is the graphics 5 key
50-60 sets up the co ordinates for the Star Gate. The character within quotes is the graphics O key
70 keys within quotes are graphics 7,6 4
80 keys within quotes are graphics 6 7,2
90-100 set up the co-ordinates for the spacecraft. The character within quotes is the graphics S key
110 this is the spacecraft
120 this line tests the position of the spacecraft. If it is beyond the entry of the Star Gate it jumps to the misses counter and adds 1 to this
130 the spacecraft is blanked out every loop so that a trail of spacecraft is not left behind
140 C is the column co-ordinate and this line adds one to C, moving the position to the right
150 moves the position of the spacecraft up or down
160 this line decides if the spacecraft has successfully entered hyperdrive
170 this line decides if the spacecraft has crashed
180 if the spacecraft has not reached the Star Gate go back to beginning
200-260 increases the 'Escape counter' by one and displays the success message on the screen
270 end of main loop (maximum five)
400-420 increases the misses counter by one and displays the message 'crashed' in inverse video
500-520 displays the score at the end of the game

There are several ways of attaining hyperdrive, and the method used in this Space Academy computer simulation boosts the craft off into hyperspace if the Star Gate is negotiated accurately

You must steer your craft up or down using keys 1 and 0. The computer will give your score after five attemps. Space Academy graduates must score five out of five

This program is a simple application of moving graphics and, for a beginner, could be the starting point for more sophisticated moving graphics programs

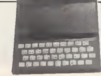
As this is a 1K program, extensive use is made of memory saving devices

Main variables

E escapes counter
J FOR/NEXT loop
X column position of Star Gate
M misses counter
A line position of Star Gate
B,C position of spacecraft

Listing 1 — Hyperdrive

```
  10 REM "HYPER DRIVE"
  11 REM   TERRY DEAN 1983
  20 LET E=NOT PI
  30 LET M=E
  40 FOR J=PI/PI TO CODE "▌"
  50 LET A=INT (RND*CODE "]")
  60 LET X=CODE "<"
  70 PRINT AT A,X,"▀▄"
  80 PRINT AT A+2,X,"▄▀"
  90 LET B=CODE "▞"
 100 LET C=VAL "2"
 110 PRINT AT B,C,"<O>"
 120 IF B=CODE "<" OR C=X THEN G
OTO 410
 130 PRINT AT B,C,"   "
 140 LET C=C+PI/PI
 150 LET B=B+(INKEY$="1")-(INKEY
$="0")
 160 IF C=X AND B=A+PI/PI THEN G
OTO 200
 170 IF C=X AND B=A OR C=X AND B
=A+VAL "2" THEN GOTO 400
 180 GOTO 110
 200 LET E=E+PI/PI
 220 PRINT "ESCAPED VIA"
 230 PRINT "HYPER DRIVE"
 240 PRINT AT B,C,"   "
 250 PAUSE 100
 260 CLS
 270 NEXT J
 280 GOTO 500
 400 PRINT "CRASHED"
 410 LET M=M+1
 420 GOTO 250
 500 CLS
 510 PRINT E," ESCAPES"
 520 PRINT M," MISSES"
1000 SAVE "HYPER DRIVE"
1010 RUN
```



Hints on conversion

As there are no PEEKS and POKES, the program could be easily adapted for the Spectrum

Spectrum users could sharpen up the graphics and make good use of colour. With a larger memory the program could be made more user friendly, with on-screen instructions and on screen scoring

For other computers, the INKEYS functions would have to be substituted for the appropriate command

Also, the PRINT AT command would have to be substituted for the appropriate commands to position the display

ABC

This program for the ZX81 in 1K is intended for young children who perhaps have not yet used a computer

It simply displays two letters of the alphabet in sequence and invites the user to key in the next letter. An on-screen score is kept

How it works

20-30 sets the hit and miss counters to 0
40 dimensions A$
50 defines A$
60-80 set up the screen display
100-130 decides which letters to display
160-170 prompt the input and prints it on the screen
180 decides it the input is correct
190-200 prints "right" and adds one to the hits counter and displays the result
230-250 prints "wrong, try again" adds one to the misses counter
260 goes back to the start

The program could be used as a keyboard familiarisation routine. Another application might be to help dyslexic children who have difficulty in remembering sequences

ABC uses the Sinclair BASIC slicing techniques as described in the ZX81 manual. With more memory available the program could be made more user-friendly

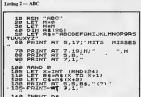
Main variables

M misses counter
H hits counter
A$ the alphabet
X random number used to select the first letter to be displayed
**B$** the pair of A$ to be displayed
C$ the answer required. This will be compared with the input
D$ the user's answer

▶

ZX81 PROGRAMS

Listing 2 — ABC



```
   10 REM "ABC'
   20 LET M=0
   30 LET H=M
   40 DIM A$(26)
   50 LET A$="ABCDEFGHIJKLMNOP9RS
TUVWXYZ"
   60 PRINT AT 5,17;'MITS  MISSES
"
   70 PRINT AT 7.19;H;"        ",M
   80 PRINT AT 5,B,"
   90 PRINT AT 7,1,"
"
  100 RAND 0
  105 LET X=INT (RND*24)
  110 LET B$=A$(X TO X+1)
  120 LET C$=A$(X+2)
  130 PRINT AT 5,5,B$,"(?)'
 ~~135 PRINT AT~~ 7,1,"
"
  140 INPUT D$
  150 PRINT AT 8,B,D$
  160 IF D$<>C$ THEN GOTO 210
  170 PAINT AT 7,1,"  [illegible]
"
  180 LET H=M+1
  190 PRINT AT 7,19,H
  200 GOTO 80
  210 PRINT AT 7,1,"[illegible]
[illegible]"
  220 LET M=M+1
  230 PRINT AT 7,25,M
  240 GOTO 140
```

Micro Tip Atari

Sounding out your Atari

While waiting for a program to load from the Atari stape unit, you'll probably find the rest of the household starts to complain about the primeval burps and whistles issuing from your TV set.

If you don't want to keep fiddling about with the TV volume control, a little known system variable called the Noisy I/O Flag is the answer.

A simple poke, and your Atari has been subdued to a noise level as low as the Spectrum's (sorry, Sir Clive!)

POKE 65,0 to silence, and POKE 65,3 to restore

On the subject of sound, I'll bet that at least one Atari owner among you has accidentally put his or her favourite music into the tape unit, with startling results. If you haven't, give it a try and see.

After about 20 seconds of music, your Atari joins in with its own chorus and then promptly shuts down. If you could stop it doing this, you could listen to your favourite music while typing in a program from HCW.

Again a little known system variable comes to the rescue. This one is called PACTL or Port A Control Register, and poking this will allow you to use the facilities of your Atari cassette unit.

POKE 54018,52 turns it on. POKE 54018,60 turns it off

All you have to do is insert the tape, press PLAY and away you go! Now comes the really interesting bit. If you combine your new knowledge with the fact that your Atari operates a stereo tape system, you will have guessed that you can have music while you load!

The left hand channel on the tape system is used for general audio, while the right is used for your program.

The tricky part is to get the right noises on the right channel, and because of the variety of hi-fis on the market, I won't try to go into all the methods that can be used. Your local electrical shop will be able to advise you on the right leads to use.

Once you have mixed the sounds on to your tape unit, you must use the POKE above to turn off the loading noises.

Finally, when you are taping your music, don't stop the tape in the middle of a program, or you may corrupt one of the blocks.

Mark Bullen

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ONE MAN'S VIEW

Don't burn your TI

After two years experience with calculator programming, my introduction to computing proper came in May 1980 when I bought an NTSC TI-99/4A with a modified colour TV, for which I paid the princely sum of £1,300 (including credit charges), which I could ill afford

I soon learned that I could not do all the things I'd wanted to, but I found this more a challenge than a disappointment I've since sold all but my soul in order to expand my system and I've recently added a 99/4A, which is allowing me to indulge myself further in my favourite pass-time of playing detective with regard to the operating system

I have invested a great deal in the machines, having been involved in TIHOME, the now-defunct user group, answering queries, writing for its sorely-missed newsletter, the first of several books (due out Feb 16th), software reviews for HCW, reviewing software submissions, writing a series of mini-articles to be published soon, trying to set up a local user group, taking an occasional class in computing, trying to make time to visit owners, criticising the machines' bad points, praising the good ones, and generally boring to death anyone who stands near me long enough

* * *

Despite TI's decision to withdraw totally from the home market (all current and forth-coming hardware, and eventually software), and despite publishers' resultant waning of interest (not that it was ever waxing, in some quarters), there is no way that I am going to 'drop' my machines The TI-99 is, in spite of its faults, an excellent introduction, albeit only now that the price is so low, and I sincerely hope TI will not discourage third-party hardware suppliers beginning to emerge in the UK, and who could, ironically, make the 99/4A a much-sought-after machine in the future

There are rumoured to be 200,000 – 500,000 machines still to be sold, and I have written to TI with some suggestions Whether these are sensible/practical/acceptable remains to be seen, especially as I have since been told the outstanding consoles are almost entirely NTSC, and therefore probably unsuitable for use in Europe

I am still relatively active, being a (back-seat) member of TIHOME's successor, the Texas Instruments Home Computer Users' Club

* * *

The worst thing that could happen would be for grieving owners to have a small funeral pyre at the bottom of the garden If you are such an owner, and you have yet to join an independent user group, then I would urge you to take the plunge The longer you have your machine, the more experience you will gain, the more you're going to want to do and, most importantly, the more you're going to want to talk about it

Magazines like Home Computing Weekly which support the TI are very rare birds, so support them with your best programs/articles/letters, etc Keep up any contacts you may make Whatever you do, be it buy another micro or emigrate, don't throw your TI in the loft

If you really can't bear to have the machine in the house, donate it to a local school/youth club/any disabled person

Peter Brooks,
Oxford

Letters to Peter Brooks about the TI Home Computer users' Club will be passed on

● This space is for you to sound off about the micro scene, to present bouquets to hurl brickbats Share your views by sending them to Paul Liptrot, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB Please give your occupation and your interest in computing

BEST SELLERS

Top 30

1	Hunchback	Ocean	Spectrum (5)
2	Manic Miner	Bug-Byte/ Software Projects	Spectrum (1)
3	Harrier Attack	Durrell	Spectrum (15)
4	Luner Jetman	Ultimate	Spectrum (8)
5	Jetpac	Ultimate	Spectrum (4)
6	The Hobbit	M.House	Spectrum (2)
7	3D Ant Attack	Quicksilva	Spectrum (6)
8	Kong	Ocean	Spectrum (7)
9	Zzoom	Imagine	Spectrum (9)
10	Falcon Patrol	Virgin	CBM 64 (13)
11	Penetrator	M.House	Spectrum (-)
12	The Hobbit	M.House	CBM 64 (10)
13	Atic Atac	Ultimate	Spectrum (19)
14	Valhalla	Legend	Spectrum (3)
15	Horace goes Skiing	Psion/ M.House	CBM 64 (14)
16	Cuthbert in the Jungle	Microdeal	Dragon (18)
17	Chequered Flag	Psion	Spectrum (26)
18	The King	Microdeal	Dragon (17)
19	Digger Dan	Ocean	Spectrum (-)
20	Chuckie Egg	A&F	Spectrum (28)
21	Arcadia	Imagine	VIC-20 (-)
22	Mini-Kong	Anirog	VIC-20 (-)
23	Hunchback	Superior	BBC (12)
24	Hover Bover	Llamsoft	CBM 64 (-)
25	Jetpac	Ultimate	VIC-20 (29)
26	Scrambler	Solar	VIC-20 (-)
27	Mined Out	Quicksilva	BBC (-)
28	Crazy Kong	Interceptor	CBM 64 (-)
29	Twin Kingdom Valley	Bug-Byte	VIC-20 (30)
30	Snooker	Visons	VIC-20 (-)

Compiled by PCS Distribution(0254 691211) and sanctioned by the Computer Trade Association. Chart is for retail sales in individual outlets in theUK and Northern Ireland

Top Ten programs for the Dragon

1	Dragrunner	Cablesoft (-)
2	Cave Fighter	Cablesoft (-)
3	Cuthbert in the Jungle	Microdeal (-)
4	UGH	Softek (-)
5	Skramble	Microdeal (-)
6	Ring of Darkness	Wintersoft (7)
7	Frogger	Microdeal (-)
8	Space fighter	Microdeal (-)
9	Pinball	Microdeal (-)
10	Dragon Hawk	Microdeal (-)

Top Ten programs for the VIC-20

1	Arcadia	Imagine (1)
2	Gridrunner	Llamsoft (3)
3	Wizard and the princess	M.House (5)
4	Crazy Kong	Interceptor (-)
5	Abductor	Llamsoft (-)
6	Golf	Audiogenic (-)
7	Plague/ Alien Demon	K-Tel (10)
8	Junior Maths and engine shed	Commodore (-)
9	Special Pack 11	Commodore (-)
10	Grandmaster Chess	Audiogenic (-)

Top Ten programs for the Commodore 64

1	Hover Bover	Llamsoft (9)
2	Grandmaster	Audiogenic (-)
3	Matrix	Llamsoft (-)
4	Gridrunner 64	Llamsoft (10)
5	Introduction to Basic	Commodore (6)
6	Attack of the Mutant Camels	Llamsoft (7)
7	Arcadia	Imagine (-)
8	Goodness Gracious	Beyond (-)
9	Frogger	Interceptor (1)
10	Motor Mania	Audiogenic (4)

Top Ten programs for the Spectrum

1	Atic Atac	Ultimate (1)
2	Jetpac	Ultimate (9)
3	Pyramid	Fantasy (3)
4	Kong	Ocean (-)
5	Ant Attack	Quicksilva (5)
6	Penetrator	M.House (6)
7	Alchemist	Imagine (4)
8	Lunar Jetman	Ultimate (2)
9	Pool	CDS (8)
10	Harrier Attack	Durrell (-)

Top Ten programs for the ZX81

1	Flight Simulation	Sinclair (-)
2	Football Manager	Addictive (-)
3	Crazy Kong	PSS (9)
4	Geography	Sinclair (-)
5	Maths	Sinclair (-)
6	History	Sinclair (-)
7	Hopper	PSS (-)
8	ZX Forth	Sinclair (-)
9	English Lit 1	Sinclair (-)
10	ZX Debug	Bug-Byte (-)

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THE
Ω MEGA
RUN. . . . . is here

The hazards you'll face for a few gold bars

Demons in the Wild West? They're lurking among the cacti in David Ryan's game for any Atari, plus joystick. Can you beat his high score of eight gold bars?

Hints on conversion

Some special commands which are used in this program are listed below. Many computers have equivalents

ADR returns the address of the specified string in the program

GRAPHICS changes the graphics mode (the screen size)

GRAPHICS 0 is 24 down by 40 across

LOCATE positions the cursor at the specified position and reads the contents under it

POSITION puts the cursor at the specified place on the screen

STICK (0) is a command to read the joystick port indicated

This game uses multi-coloured graphics characters and display lists so it may be difficult to translate to other machines. It will probably be easier if only the idea is used when writing this program for other machines

You play the role of a rather weak sheriff who must go out into the badlands around the local town, pick up a bar of gold and deposit it safely in the vault of the bank.

Unfortunately the badlands are inhabited by several demons who hate sheriffs. They will hunt you down and kill you. Also, given the opportunity, they will raid the bank.

Fortunately, the sheriff is an avid cactus grower. He can transplant or destroy cacti at will. To move the cacti and the gold bars around the screen the sheriff must push the object in the desired direction.

Because the sheriff has not been attending the local body building classes, he can only move one object at a time. To compensate for this weakness the sheriff can move around the back of the screen in a "wrap-around" fashion.

To score one point the sheriff must push a gold bar into the bank.

Unfortunately, the demons do not like this, they can hyperspace around the screen at will and occasionally walk through a cactus if the square on the opposite side is clear.

Variables

TOT total bars home
LVS lives
DX(3), DY(3) demon positions
L level
HOME bars home
MAN, CACTUS, DEMON, BANK, GOLD ATASCII codes for specified character
HI hi score
BX BY bank positions
MNX MNY,MX MY man positions
Z,DX, DY, DQX, DQY etc random variables

To move the sheriff insert a joystick into port 0 (far left at the front of the computer). To cut down a cactus hit the fire button (this will only work occasionally and in an area close to the sheriff).

Note cutting down a cactus may frighten a demon into hyperspace. During play, to advance to a new level, hit any key.

One strategy to use in play is to build a wall of cacti around the bank to protect it. The wider the wall the safer the bank.

You lose a life if a demon touches you or the bank. My hi-score is eight gold bars!

How it works

1-450 set up game display
500-600 man movement
1000-1140 demon movement
2000-2900 demon bumps into cactus
3000-3850 end of game
4000-4090 move cactus
5000 5240 more gold
6000-6060 new level
7000-7070 cut down cactus
31999-32180 redefine character set
32400-32600 set up display lists

```
0 REM *****************
1 REM **             **
2 REM ** THE GOLD RUN **
3 REM **     -by-    **
4 REM **  David Ryan  **
5 REM **             **
6 REM **  N  IRELAND  **
7 REM **   20/08/83   **
8 REM **             **
9 REM *****************
10 GRAPHICS 0 TOT=0 LVS=3 GOSUB 32000 P
OKE 752,1 SETCOLOR 3,0,15
20 SETCOLOR 0,2,10 SETCOLOR 1,12,14 SET
COLOR 2 8,2 SETCOLOR 4,2,6
100 REM SET UP VARIABLES
110 DIM DX(3) DY(3) L=1 HOME=0 BARS=5
120 MAN=33 CACTUS=34 DEMON=35 BANK=36 G
OLD=37 HI=0
200 REM SET UP DISPLAY
210 FOR A=1 TO 3 DX(A)=0 DY(A)=0 NEXT A
220 REM CACTUS
```

```
230 FOR A=1 TO 225-L*25 CX=INT(RND(0)*3
8)+1 CY=INT(RND(0)*21)+1 LOCATE CX,CY,Z
 IF Z<>32 THEN 250
240 SOUND 0,100,10,10 POSITION CX,CY ?
CHR*(CACTUS) SOUND 0,0,0,0
250 NEXT A
260 REM BANK
270 BX=INT(RND(0)*38)+1 BY=INT(RND(0)*2
)+19 LOCATE BX,BY,Z IF Z<>32 THEN 270
280 FOR E=1 TO 200 STEP 10 SOUND 0,E,10
 10 POSITION BX,BY ? CHR*(BANK) NEXT E
SOUND 0 0,0,0
290 REM MAN
300 MX=INT(RND(0)*38)+1 MY=INT(RND(0)*6
)+1 LOCATE MX,MY,Z IF Z<>32 THEN 300
310 FOR E=200 TO 1 STEP -10 SOUND 0,E,1
0 10 POSITION MX,MY ? CHR*(MAN) NEXT E
SOUND 0 0,0,0
320 REM DEMONS
330 MAX=2-INT(L/4) IF MAX<1 THEN MAX=1
340 FOR A=1 TO MAX
```

```
350 DX(A)=INT(RND(0)*38)+1 DY(A)=INT(RN
D(0)*11)+10 LOCATE DX(A),DY(A),Z IF Z<>
32 THEN 350
360 POSITION DX(A),DY(A) ? CHR*(DEMON)
370 FOR Q=15 TO 0 STEP -1 SOUND 0,Q,10,
Q SOUND 0 Q 8,Q NEXT Q SOUND 0,0,0,0
380 POSITION DX(A),DY(A) ? CHR*(DEMON)
SOUND 0,0,0,0 NEXT A
390 REM GOLD
400 FOR A=1 TO BARS
410 GX=INT(RND(0)*38)+1 GY=INT(RND(0)*2
1)+1 LOCATE GX,GY,Z IF Z<>32 THEN 410
420 FOR E=1 TO 250 STEP 20 SOUND 0,E,12
 10 POSITION GX GY ? CHR*(GOLD) NEXT E
SOUND 0 0 0 0 NEXT A
430 POKE 87 1 POSITION 0 1 ? #6,CHR*(15
6) POSITION 0,1 ? #6,"_PRESS_FIRE___HI
  " POSITION 17 1 ? #6,HI
440 IF STRIG(0)=0 THEN POSITION 0,1 ? #
6,CHR*(156) GOSUB 32540 GOTO 500
450 GOTO 440
```

```
500 REM MAN MOVEMENT
510 POKE 77,0 POKE 764,255 GOSUB 1000 I
F STRIG(0)=0 THEN 7000
515 IF PELK(764)<>255 THEN POKE 764,255
 GOTO 6000
520 JS=STICK(0) IF JS<>14 AND JS<>11 AN
D JS<>13 AND JS<>7 THEN 500
530 MNX=MX+(JS=7)-(JS=11) MNY=MY+(JS=13
)-(JS=14)
532 IF MNX<1 THEN MNX=38
534 IF MNX>38 THEN MNX=1
536 IF MNY>21 THEN MNY=1
538 IF MNY<1 THEN MNY=21
540 LOCATE MNX,MNY,Z
550 IF Z=DEMON OR Z=DEMON+128 THEN 3200
 REM END OF GAME
560 IF Z=CACTUS OR Z=CACTUS+128 THEN 40
00 REM REM MOVE CACTUS
570 IF Z=BANK OR Z=BANK+128 THEN FOR E=
15 TO 0 STEP -1 SOUND 0,10,8,E MNX=MX M
NY=MY NEXT E SOUND 0,0,0,0 GOTO 500
580 IF Z=GOLD OR Z=GOLD+128 THEN 5000 R
EM MOVE GOLD
590 SOUND 0,10,10,10 POSITION MNX,MNY ?
 CHR$(MAN) POSITION MX,MY ? " " MX=MNX
MY=MNY SOUND 0,0,0,0
600 POSITION BX,BY ? CHR$(BANK) GOTO 50
0
1000 REM DEMON MOVEMENT
1010 FOR A=1 TO MAX
1020 IF DX(A)>MX THEN DX=DX(A)-1
1030 IF DX(A)<MX THEN DX=DX(A)+1
1040 IF DY(A)<MY THEN DY=DY(A)+1
1050 IF DY(A)>MY THEN DY=DY(A)-1
1060 LOCATE DX,DY,Z
1070 IF Z=CACTUS OR Z=CACTUS+128 THEN 2
000
1080 IF Z=BANK OR Z=BANK+128 THEN 3000
REM END OF GAME
1090 IF Z=GOLD OR Z=GOLD+128 THEN DX=DX
(A) DY=DY(A)
1100 IF Z=MAN OR Z=MAN+128 THEN 3000 RE
M END OF GAME
1110 IF Z=DEMON OR Z=DENON+128 THEN 200
0
1120 IF DX(A)=DX AND DY(A)=DY THEN 1140
1130 POSITION DX,DY ? CHR$(DEMON) POSIT
ION DX(A),DY(A) ? " " DX(A)=DX DY(A)=DY
1140 NEXT A RETURN
2000 REM DEMON BUMPS INTO CACTII
2010 RESTORE 2990 FOR W=1 TO INT(RND(0)
*8)+1 READ QX,QY NEXT W
2020 DQX=DX(A)+QX DQY=DY(A)+QY
2030 IF DQX<1 THEN DQX=1
2040 IF DQX>38 THEN DQX=38
2050 IF DQY<1 THEN DQY=1
2060 IF DQY>21 THEN DQY=21
2070 LOCATE DQX,DQY,Z
2080 IF Z=BANK OR Z=BANK+128 THEN 3000,
REM END OF GAME
2090 IF Z=GOLD OR Z=GOLD+128 OR Z=DEMON
 OR Z=DEMON+128 THEN 1140
2100 IF Z=MAN OR Z=MAN+128 THEN 3000 RE
M END OF GAME
2110 IF Z=CACTUS OR Z=CACTUS+128 THEN 1
140
2120 DX=DQX DY=DQY GOTO 1130
2990 DATA -1,-1,0,-1,1,-1,-1,0,1,0,-1,1
 0,1,1,1
3000 REM END OF GAME
3010 LVS=LVS-1 IF Z=BANK OR Z=BANK+128
THEN 3500
3020 FOR Q=1 TO 10 SOUND 0,150,10,10 PO
SITION DX,DY ? CHR$(DEMON) POSITION DX(
A),DY(A) ? CHR$(MAN)
3030 FOR W=1 TO 10 NEXT W SOUND 0,250,1
0,10 POSITION DX,DY ? CHR$(MAN) POSITIO
N DX(A),DY(A) ? CHR$(DEMON)
3040 FOR W=1 TO 10 NEXT W NEXT Q SOUND
0,0,0,0
3050 FOR Q=250 TO 0 STEP -10 POKE 87,1
POSITION 10,1 ? #6,"lives ",LVS SOUND 0
 Q 10 10 SOUND 1,Q,8,10
3060 POSITION 13,1 ? #6,"      " SOUND
 0 Q 10 10 SOUND 1,Q,8,10 NEXT Q SOUND
0 0 0 0 SOUND 1,0 0,0
3070 IF LVS=0 THEN 3750
3080 BARS=BARS-HOME POSITION 0,0 GOSUB
32540 POSITION MX,MY ? " "
3090 MX=INT(RND(0)*38)+1 MY=INT(RND(0)*
6)+1 LOCATE MX,MY,Z IF Z<>32 THEN 3090
3100 FOR E=200 TO 1 STEP -10 SOUND 0,E,
10,10 POSITION MX,MY ? CHR$(MAN) NEXT E
 SOUND 0 0,0,0
3110 POSITION MNX MNY ? " " POSITION DX
,DY ? " " POSITION BX,BY ? CHR$(BANK) G
OTO 430
3200 LVS=LVS-1 IF Z=BANK OR Z=BANK+128
THEN 3500
3220 FOR Q=1 TO 10 SOUND 0,150,10,10 PO
SITION MX,MY ? CHR$(DEMON) POSITION MNX
 MNY ? CHR$(MAN)
3230 FOR W=1 TO 10 NEXT W SOUND 0,250,1
0 10 POSITION MX MY ? CHR$(MAN) POSITIO
N MNX MNY ? CHR$(DEMON)
3240 FOR W=1 TO 10 NEXT W NEXT Q SOUND
0,0 0,0 GOTO 3050
3500 FOR Q=1 TO 10 SOUND 0,50,10,10 POS
ITION DX DY ? CHR$(DEMON) POSITION DX(A
),DY(A) ? CHR$(BANK)
3510 FOR W=1 TO 10 NEXT W SOUND 0,150,1
0 10 POSITION DX,DY ? CHR$(BANK) POSITI
ON DX(A),DY(A) ? CHR$(DEMON)
3520 FOR W=1 TO 10 NEXT W NEXT Q SOUND
0 0 0,0
3530 GOTO 3050
3750 REM NEW GAME ?
3760 POKE 87 1 POSITION 0,0 ? #6,"    g
ame  over  " POSITION 0,1 ? #6," ANOTHE
R GO ? (Y/N)"
3770 POKE 764 255
3780 PZ=PEEK(764)
3790 IF PZ=43 THEN 3820
3800 IF PZ=35 THEN NEW
3810 GOTO 3780
3820 LVS=3 L=1 HOME=0 BARS=5 POKE 764,2
55 ? #6,CHR$(125) POKE 559,0 GOSUB 3240
0
3830 SETCOLOR 0,2,10 SETCOLOR 1,12,14 S
ETCOLOR 2 8,2 SETCOLOR 4,2 6
3840 IF TOT>HI THEN HI=TOT
3850 TOT=0 GOTO 200
4000 REM MOVE CACTUS
4010 CX=MNX CY=MNY
4020 CNY=CY-(JS=14)+(JS=13) CNX=CX+(JS=
7)-(JS=11)
4030 IF CNX<1 THEN CNX=38
4040 IF CNX>38 THEN CNX=1
```

ATARI PROGRAM

```
4050 IF CNY<1 THEN CNY=21
4060 IF CNY>21 THEN CNY=1
4070 LOCATE CNX,CNY,Z
4080 IF Z<>32 THEN MNX=MX MNY=MY FOR E=
15 TO 0 STEP -1 SOUND 0,150,10,E SOUND
1 10,8,E NEXT E GOTO 500
4090 POSITION CNX,CNY ? CHR$(CACTUS) GO
TO 590
5000 REM MOVE GOLD
5010 GX=MNX GY=MNY
5020 GNY=GY-(J5=14)+(J5=13) GNX=GX+(J5=
7)-(J5=11)
5030 IF GNX<1 THEN CNX=38
5040 IF GNX>38 THEN GNX=1
5050 IF GNY<1 THEN GNY=21
5060 IF GNY>21 THEN GNY=1
5070 LOCATE GNX,GNY,Z
5080 IF Z=BANK OR Z=BANK+128 THEN 5200
5090 IF Z<>32 THEN MNX=MX MNY=MY FOR E=
15 TO 0 STEP -1 SOUND 0,150,10,E SOUND
1,10,8,E NEXT E GOTO 500
5100 POSITION GNX,GNY ? CHR$(GOLD) GOTO
 590
5200 FOR Q=1 TO 8 FOR W=1 TO 250 STEP 2
0 SOUND 0,W,10,10 SOUND 1,W,8,10 NEXT W
 NEXT Q
5210 FOR W=15 TO 0 STEP -1 SOUND 0,50,1
0,W SOUND 1,50,12,W NEXT W SOUND 0,0,0,
0 SOUND 1,0,0,0 HOME=HOME+1
5220 TOT=TOT+1 IF HOME=5 THEN HOME=0 GO
TO 6000 REM NEW LEVEL
5230 POKE 87,1 POSITION 0,1 ? #6,"bars
home ",TOT POKE 87,0
5240 GNX=GX GNY=GY GOTO 590
6000 REM NEW LEVEL
6010 FOR R=1 TO 2 FOR S=1 TO 4 FOR E=15
 TO 0 STEP -2 SOUND 0,(250/R)/S,10,E SO
UND 1,(50)*S,10 E-1
6020 NEXT E NEXT S NEXT R SOUND 0,0,0,0
 SOUND 1 0,0 0
6030 POKE 87 1 POSITION 0,0 ? #6,CHR$(1
56) POSITION 0,0 ? #6,"   A NEW  LEVEL
" FOR Q=1 TO 1000 NEXT Q
6040 L=L+1 BARS=5
6050 ? #6,CHR$(125) GOSUB 32540
6060 SETCOLOR 0,2,10 SETCOLOR 1,12,14 S
ETCOLOR 2,8,2 SETCOLOR 4,2,6 GOTO 200
7000 REM CUT DOWN CACTUS
7010 RESTORE 2990 FOR Q=1 TO INT(RND(0)
*8)+1 READ CX,CY NEXT Q CX=MX+CX CY=MY+
CY
7015 IF CX<1 OR CX>38 OR CY<1 OR CY>21
THEN 500
7020 LOCATE CX,CY,Z
7030 IF Z=CACTUS OR Z=CACTUS+128 THEN 7
050
7040 FOR E=15 TO 0 STEP -1 SOUND 0,100,
12 E NEXT E SOUND 0,0,0,0 GOTO 500
7050 FOR Q=100 TO 0 STEP -5 SOUND 0,Q,6
 10 SOUND 1 Q,8 10 POSITION CX,CY ? " "
 POSITION CX CY ? CHR$(CACTUS)
7060 NEXT Q POSITION CX,CY ? " " SOUND
0 0 0,0 SOUND 1 0,0,0 GOTO 500
31999 REM REDEFINE CHARACTER SET
32000 POKE 106,PEEK(106)-5 GRAPHICS 0 S
T=(PEEK(106)+1)*256 POKE 751,1 POKE 756
 ST/256
32010 DIM XFR$(38) RESTORE 32050 FOR A=
1 TO 38 READ C XFR$(A,A)=CHR$(C) NEXT A
```

```
32020 Z=USR(ADR(XFR$)) RESTORE 32100
32030 READ X IF X=-1 THEN RESTORE  GOTO
 32400
32040 FOR Y=0 TO 7 READ Z POKE Y+X+ST,Z
 NEXT Y GOTO 32030
32050 DATA 104 169,0,133,203,133,205,16
9,224 133 206,165,106,24,105,1,133,204,
160,0,177 205 145 203 200,208,249
32060 DATA 230 204,230,206,165 206,201,
228 208 237 96
32090 REM MAN
32100 DATA 8,48,82,48,48,184,48,40,204
32110 REM CACTUS
32120 DATA 16 0,32,34,34,42,32,32,32
32130 REM DEMON
32140 DATA 24 0,60,235,215,215,60,0,0
32150 REM BANK
32160 DATA 32 0 64,255,255,150,150,150,
150
32170 REM GOLD
32190 DATA 40,102,102 102,102,102,102,1
02,102,-1
32400 REM SET UP KEY DISPLAY LIST
32410 RESTORE 32495
32420 FOR A=1536 TO 2000 READ D IF D=-1
 THEN 32435
32490 POKE A,D NEXT A
32435 POKE 559,0 POKE 1540,PEEK(88) POK
E 1541,PEEK(89) POKE 560,0 POKE 561,6 P
OKE 559,34
32440 SETCOLOR 0,2,10 SETCOLOR 1,12,14
SETCOLOR 2 8 2 SETCOLOR 4,2,6
32442 POKE 87 2 POSITION 5,0 ? #6,"THE
 KEY" POSITION 5,1 ? #6,"---  ---"
32444 POKE 87 1 POSITION 4,3 ? #6,"the
MAN  is" POKE 87,0 POSITION 19,2 ? CHR$
(33)
32446 POKE 87,1 POSITION 4,7 ? #6,"a  D
EMON is" POKE 87,0 POSITION 19,4 ? CHR$
(35)
32448 POKE 87,1 POSITION 4,11 ? #6,"a C
ACTUS is" POKE 87,0 POSITION 19,6 ? CHR
$(34)
32450 POKE 87,1 POSITION 4,15 ? #6,"the
```

```
BANK is" POKE 87,0 POSITION 19,8 ? CHR
$(36)
32452 POKE 87,1 POSITION 3,19 ? #6,"a G
OLD BAR is" POKE 87,0 POSITION 19,10 ?
CHR$(37)
32460 POSITION 0,0 FOR A=1 TO 11 ? #6,"
 " NEXT A
32470 ? #6,"  HIT any KEY" POKE 764,255
32480 FOR A=1 TO 255 SOUND 0 A,10,10 SO
UND 1,255-A 12 10 SOUND 2,A/10,8,10
32485 SETCOLOR 4 INT(RND(0)*16),INT(RND
(0)*16)+1 IF PEEK(764)=255 THEN NEXT A
GOTO 32480
32490 SOUND 0 0 0,0 SOUND 1,0,0,0 SOUND
 2 0,0,0 POKE 764,255 ? CHR$(125) POKE
559 0
32495 DATA 112 112 112 71,0,0,7,6,6,4,6
 6 4 6,6,4,6 6,4,6,6,4,7,7,4,65,0,6,-1
32500 REM SET UP GAME DISPLAY LIST
32510 RESTORE 32600 FOR A=1536 TO 2000
READ D IF D=-1 THEN 32590
32520 POKE A D NEXT A
32530 POKE 559,0 POKE 1540,PEEK(88) POK
E 1541 PEEK(89) POKE 560,0 POKE 561,6 P
OKE 559 34
32540 POKE 87,1 POSITION 4,0 ? #6,"the
gold run" POSITION 0,1 ? #6,"bars home
",TOT
32550 POSITION 12,1 ? #6,"lives ",LVS P
```

```
OKE 87,0 RETURN
32600 DATA 112,112,112,70,0,0,6,4,4,4,4
 4 4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,65
,0,6,-1
```

Micro Tip **Dragon**

Moveable machine code

I use this short machine code routine as an extension to the (CLSn) command in BASIC on the Dragon.

It is entered as shown, but can be relocated in any part of user RAM. To do this, change the value of (I)

When the BASIC program has been entered and run, the machine code may be called using EXEC 32001

```
10 CLEAR 200,32000
20 FOR I = 32001 TO 32018
30 READ A$
40 POKE I,VAL("&H"+A$)
50 NEXT I
60 DATA 8E,04,00,86,DF,A7,80,4F,86,C6,A7,80,8C,06 00,
   26,F2,39
```

If you want to relocate this, then the CLEAR statement in line 10 must also be altered to stop BASIC using this part of memory

It is possible to change the data statement in line 60 to give a different effect when the machine code is executed. Do this by changing the hex value DF in line 60

To do this, decide on the graphic character (CHR$) that you want to use, find its value (including colour), convert this into hex and put it in place of mine.

J H Lincoln

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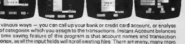

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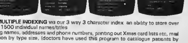

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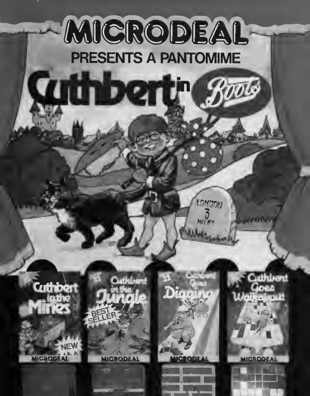
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